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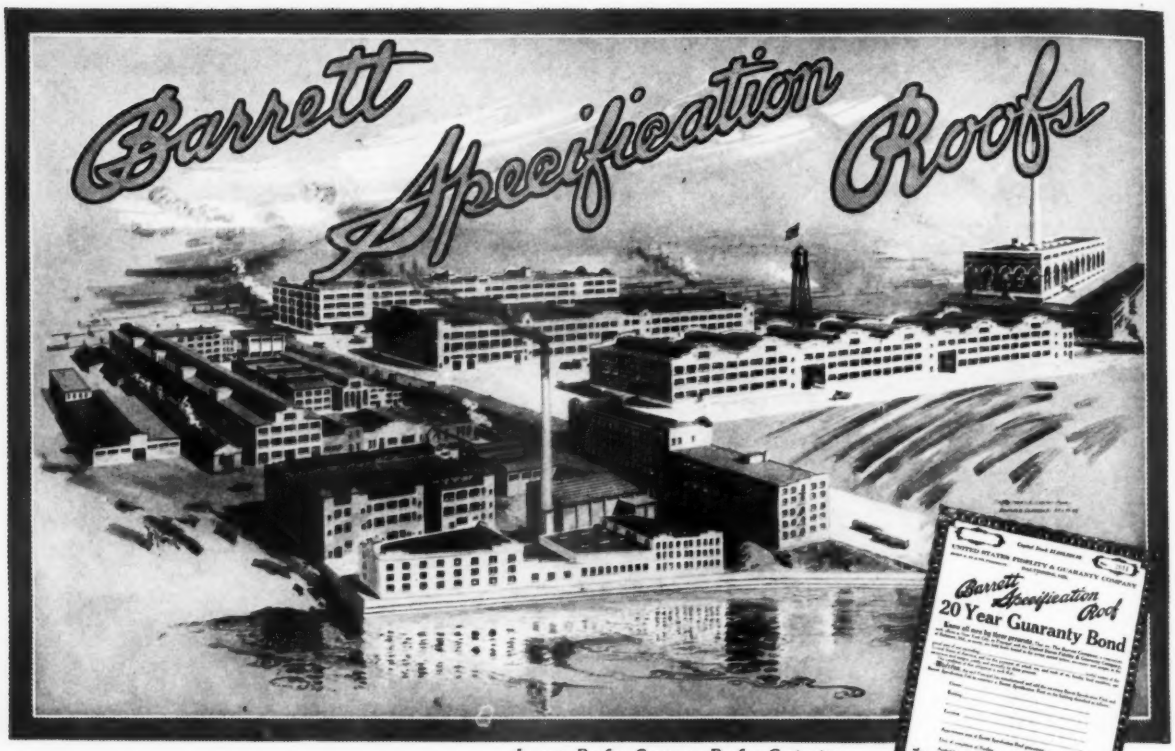

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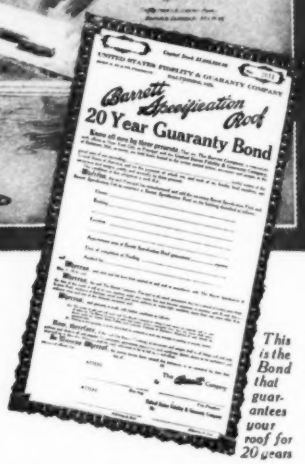

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St. Louis Carrying the Holy Crown of Thorns in Procession to Notre Dame

Drawn and lithographed by Jules David

Old Paris (1250)

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Shadows and Straws

THE INDUSTRIAL HOUSING EMERGENCY, in its relation to the war, seems to be involved in a maze of obscurity. The original committee of the Council of National Defense, charged with the task of investigating the situation, made its report to that body more than two months ago. Its findings must have been either incomplete or unsatisfactory, for the Council immediately began holding hearings which apparently had no other object than the verification of the evidence presented by the committee. This process did not produce any tangible result, and we may suppose that it still left the whole question where it was at the beginning, since a third committee, of which Mr. Otto Eidlitz, of New York City, was made chairman, was charged to cover the same ground. This committee reported directly to the President and his cabinet, we believe, and while the substance of the report has not been made available, press reports indicate that it carried definite recommendations and made plain the fact that a shortage of houses was seriously interfering in the production of many vital necessities of war. Subsequent to that report, there have been rumors to the effect that financial aid would be extended to one or two housing undertakings which had been begun, or which were ready to begin, but which had been stopped by shortage of money. Other rumors were to the effect that the whole matter, with the possible exception of such action as we have mentioned, would be left to be dealt with by Congress at its next session.

THE SHIPPING BOARD, which has separate authority for dealing with the house-shortage, has, according to a press report, enlisted the services of Mr. Flannery, President of the American Vanadium Company, whose task will be to see that housing accommodations are provided, as fast as possible, for workmen in the shipbuilding centers. On the other hand, it is also rumored that the Shipping Board's Committee on Housing will be merged with a general Commission or Administration, which will deal with all housing undertakings in which the Government has an interest. What the policies of this Commission will be is still left largely to conjecture, although current opinion inclines to the belief that it will devote most of its effort to financing private undertakings with government funds, and will commit the Government to actual participation in land-purchase and house-construction only when no other solution can be found. In contrast with such a procedure, assuming it to be the one to be followed, we have the experience of England, as narrated elsewhere in this issue by our special correspondent, Mr. Frederick L. Ackerman.

EXPERIENCE IN THE REGISTRATION of architects is developing at a rapid rate. The annual report of the State Board of Registration in New York state presents some very definite data upon which to base preliminary conclusions.

Total applications received during the first two years since the law went into effect number 1,991; of these, 175 were withdrawn, 1,367 have been approved, 358 have been disapproved with the recommendation that they be not given certificates without examination, and 89 remain to be given final consideration.

No examinations have been held for the admittance of new practitioners. Only two applications as yet have been received for registration upon examination.

During the year the Board has approved 350 applications for registration, making the total registration on September 13, 1917, 1,367. One hundred and eight applicants appeared before the Board during the past year for personal hearings, most of them in appeal from previous disapproval of their applications, and some upon request

of the Board to present proofs of qualifications. Eighteen appeals were granted, leaving the net total disapprovals for two years 358, as stated.

The Board examined several hundred sets of drawings and specifications submitted at its request by applicants as evidence of competency.

The Rules for the conduct of the Board which, including a syllabus of examinations submitted last year, were given further careful consideration by Chancellor Sexton and Dr. Downing, and finally adopted by the Regents May 31, 1917, will be printed shortly in booklet form.

The Board of Examiners, after two years' experience with the operation of the Registration Law, and, after examining the work of scores and hundreds of architects who are not a credit to their profession, is confirmed in its belief that the most important function of the Registration Law is its tendency to raise the standard of education and technical qualifications. The Registration Law does not prevent engineers and others from doing building work, but it does forbid any new practitioner to assume the title of "architect" until permission is granted, for reasons which in effect make "architect" a degree and the certificate a diploma of achievement. The law does not in any way compel the public to patronize architects, except as it may command respect by fixing high standards of ability and qualifications for those permitted to use the title. The Board believes that it has evidence of a strong impulse toward higher education on the part of young men ambitious to practise, and, with the assistance of architectural schools willing to coöperate with the Board, has confidence that the law will justify its beneficent purpose.

Fourteen states of the Union have passed laws regulating the practice of architecture. It is strongly to be hoped that, as other states enact similar legislation, all influences will tend toward a common standard which will permit reciprocatory arrangements between states.

The Significance of England's Program of Building Workmen's Houses

By FREDERICK L. ACKERMAN

IT* was during a cold drenching rain that I viewed England's colossal munition plant, which extends for many miles over what was but two years ago a vast area of agricultural land with only here and there an occasional farmhouse or settlement. Much of this I saw in detail during my visit, but, early in the day I was taken to a little wooden platform from which the King had viewed this truly remarkable achievement but a few months previous. From this vantage-point the magnitude of the undertaking could be seen, but, extending far beyond the limits of the eye to distinguish form, there was, one realized by the tone of the landscape, a continuation of what one so clearly saw in the foreground.

In the extent of this operation I felt that for the first time I sensed something of the magnitude of what must be the scale of the operations at the front. Surely here, with this vast fabric of war industry spread out before me, I could sense the tremendous power which is accumulating in the world to the end that the Hun shall be crushed.

Of the intensely interesting details and processes of this establishment I am not at liberty to speak, but this I surely may say: there was expressed in its well thought out and ordered arrangement, in the permanent character of the structures, the well-made roads—in a word, the thoroughness of it all—the attitude of the British people toward this awful task which is now our task also. Not alone in these respects was there expressed the broad imaginative concept which must have preceded, but in the scheme of management and in the management's attitude toward the value and absolute importance of adequate housing and environment, recreation and the general welfare of the workers, one witnessed the actual fulfilment of a hope. New values had been assigned to industrial processes and to the entire range of the factors contributing. It was evident that no longer was the aim of industry focused upon intensive processes and volume (important as are these today) and profit; but the aim was, first, national security and the well-being of all to enjoy that security when it shall have been attained. Surely there must have been some such concept of the task in the beginning, else in the complex processes of execution and management such results could not have been obtained. This industrial community, brought into being during two short years under the tremendous handicap of war, presents the

*NOTE.—Elsewhere in this issue will be found special correspondence from Mr. Ackerman bearing upon the broad financial and technical aspects of the British Government's extraordinary building developments.—THE EDITOR.

appearance of—in fact is—a well-governed city of many thousands. There are unusually comfortable buildings in which to work; excellent homes and comfortable hostels in which to live—and gardens to plant; institutes and recreation buildings in which the workers meet in social intercourse; churches in which those of various denominations may worship; moving-picture houses where popular American films may be seen for a sixpence; schools, hospitals, stores, markets, and last, but not least, an environment wherein there is everywhere expressed a quality of taste which is not only remarkably high, but thoroughly appropriate. This unique community stands as a permanent exhibit of what the State can do when it acts with the full power of its rightful authority and with a broad enlightened conception of its aim and purpose. It is an exhibit of what may be accomplished by delegating to imaginative men the necessary power and authority; and it is also an example of what any enlightened community can achieve by surrendering its burden of fallacies regarding super-individual rights and the rights of property.

It was refreshing to talk with those who had been responsible for the development of this remarkable organization, particularly he who had been knighted for his services in this industrial field of the war's operations, and to receive from him first-hand what he deemed to be the essential contributing factors to fruition. He emphasized again and again the need of an almost unlimited scope at conception, for who can foresee and forecast the extent of war's demand for munitions? Here, where the initial plan extended far beyond the borders of the then conceived probability, we find within two years the fulfilment of the remotest possibility. And he emphasized, in particular, the vital importance, at the very outset, of a broad program looking to the immediate provision of all the factors and elements related to the comfort and the welfare of the workers; for he said that even here, where all these had been included in the original concept, the tremendous call for munitions and more munitions had forced progress upon the purely industrial elements in advance of those related to the workers' well-being. He warned us against giving way to such pressure, for their experience had demonstrated that in the end it was a fallacy to assume that conditions looking to well-being and the provision of amenities (he used this term) could even for a short time be dispensed with. He cited as proof of this certain difficulties with labor, and the temporary character (a black eye he called it) which resulted from the lack of certain provisions of this sort at the start, and he recalled the summoning of every available resource to provide the things which had always been known to be essential to the comfort and the health of workmen and workwomen, but of which war experience had shown the value in so striking a manner that it will never again be forgotten in the industrial future of England.

In his description of the structure of the organization I was greatly inpressed with the scope and the simplicity of it all, and, in particular, with the fact that the organization did not limit itself to the work within the factories, but that it was essentially one in which the values related to work, rest, and recreation, had been carefully balanced and adjusted.

It is true all activities and interests were focused upon a single purpose, but that purpose was not allowed to overshadow nor to crush others of vital importance. The axis about which this huge mechanism revolved seemed to be the thought that here it would be shown that industry need not crush the souls of men; that huge production may be accomplished, while, at the same time, the condition of the workers may be improved. In other words it was to demonstrate that high social, moral, and physical standards are essential to a nation's well-being in war or during peace.

It was not necessary for him to tell me this, for as I went about the plant and the towns created just outside the fenced-in areas, the thought that such had been the purpose was quite evident. The technique of this accomplishment involves a detailed description of building as well as methods of operation; all that would require many pages—a word must suffice.

At the plant I was greatly impressed with the well-arranged change-rooms; these were not small congested affairs, but extended over a large area and presented in plan the appearance of an architectural project. They were of permanent materials, arranged for men and women, each of the three shifts being provided with an independent unit. There were drying-rooms for wet clothes, the most generous bath and wash-

up facilities, with cheerful lunch-rooms. It was evident here, and throughout the plant, that the comfort and convenience of the workers had been given a consideration quite as serious as that given to the housing of machines.

The streets of the towns had been laid out (in haste to be sure) by one of England's foremost town planners, Raymond Unwin. Along these streets were disposed the cottages, hostels, shops, and where appropriate in location, churches, schools, institutes, recreation buildings, and all of the essential features of a well-ordered community. In the main, all except the hostels and barracks were of permanent material, and in the spirit of the designs and in the disposition of the various elements there was a charm and, at the same time, a frank recognition of the problem. The work is, on the whole, simple and more direct than the English garden city work with which we are familiar, and I am inclined to think that it is, in many respects, of a higher order of merit than much that was executed in the days of peace. The cold, bitter rain through which I saw this was not sufficient to kill my enthusiasm—I saw it in contrast to our rather stupid efforts at industrial housing. In its rough outlines, with few trees, and almost no hedges (these were being planted), it was a most significant witness of a new attitude of mind toward the contributing factors to industry. A standard had here been established which would surely give direction to the work of reconstruction throughout the years to come.

To be sure, not all of the buildings are permanent; there are temporary cottages for families, built in the first mad rush of construction. There are temporary hostels for girls, but, in the main, the cottages are permanent, as are the stores, markets, schools, churches, recreation buildings, and hospitals; and repeatedly I was advised against the temporary structure, for it is a dead loss at the end or is sure to become an unsightly element. The cottages built without partitions, and used as hostels for single workers, have proved to be an excellent temporary measure.

It is a pity that I must omit details of the life in such a community. It is not the depressing sort of existence one is apt to assume it to be. Many interesting and vivid impressions remain of my visit, and among them none more interesting and significant than that of a hostel where some two hundred girls are housed. There was in this an orderliness, a tidiness, and an expression of home comfort created by mere colors and inexpensive curtains, and, above all, the home odor of the kitchen, which I passed through while a meal was being prepared, which not only whetted my appetite, but made me realize that there must be a brighter future for not a few as a result of these influences and associations.

To actually see this; to know that it was a reality; to witness an enormous industrial community in which law, order and arrangement prevailed; to see no slums and to realize that in this community there would be no slums; to sense the balance which it is possible to maintain between intensive industry and the normal life of the worker—is to feel a thrill such as one seldom experiences. To realize that this great war is the impulse which brought this thought into being gives to war an added significance, for we know now, long before the end, that it has not been in vain.

As I glanced back for a last impression of this great enterprise, I asked myself, why is it that labor has limited the scope of its endeavor (I assess this by the popular opinion created by its recognized activity) to the question of higher wages and shorter hours? Of shorter hours we know the value, but of the value of higher wage, we may well ask—does it provide that for which it aims? A higher wage does not necessarily bring more adequate housing, nor a better environment, nor social contact, nor the amenities of life. Wages is something easily dissipated or absorbed in higher costs of living, whereas these other elements are of a permanent nature. No possible scale of wages given to the workers in this great establishment, nor in the others I have seen, could have produced the permanent asset to be enjoyed by labor that is founded in these communities.

Would not much more accrue to labor in the end if, in America, a greater emphasis were to be placed upon a program for adequate housing and the provision of the amenities? Were this made the central theme of activity, it is quite possible to forecast that what has been accomplished here might also be accomplished in America, and that whatever gain accrued to labor, from time to time, that gain might be established as a permanent enduring value.

London, October 27, 1917.

The Great Chance!

WHAT IS A HOUSE? III

By CHARLES HARRIS WHITAKER

"The State is a physical body prepared for the incarnation of the soul of a race. The body of the national soul may be spiritual or secular, aristocratic or democratic, civil or militarist predominately. One or the other will be most powerful, and the body of the race will by reflex action affect its soul, even as through heredity the inherited tendencies and passions of the flesh affect the indwelling spirit. Our brooding over the infant State must be dual, concerned not only with the body but the soul. . . . What we require more than men of action at present are scholars, economists, scientists, thinkers, educationalists, and litterateurs, who will populate the desert depths of national consciousness with real thought and turn the void into a fullness."

THESE words were written by A. E.* in his prophetic summing up of the case for what he calls, the "infant State of Ireland." They are so clear an answer to all that frantic questioning which asks why men do not appreciate architecture, and why art has fallen upon such troubled days, that there seems little more to be said. Yet these phrases which are so prescient with the slow transformation of thought, as war whips and goads us to face the truths which we let sleep for so long, cannot be dismissed with a sigh of relief. In summing up a great synthetic truth, they only point the way for more thinking. All states are in their infancy today, for they stand at the threshold of an opportunity which no man can measure. The wild currents of national life have been caught up in a seething whirlpool. All have been drawn into the vortex. None will emerge to flow along the path by which it entered. We are all given the Great Chance!

What is that chance? How can we translate the vague utterances which come to us on every hand, from our economists as from our poets, from plain men in all lands who have caught the vision of something to be won from the sacrifice and who grope with words in trying to express their faith that "things will never be the same again." Of a surety, things will not be the same, and our faith is that they will be better; that we shall win to a higher form of life; that somehow or other we shall wring great good from great evil. Now all is confusion. Resolution to win is dominant, and necessarily so. The Chance is not yet here but only on the way. Yet we are forced, in many ways, to see that it is in some manner connected with our sacrifice, and that it is from that sacrifice that we must learn how to seize it and use it rightly when at last we have won to it.

If we ask what part the House will play in this new opportunity, we relate the Chance directly to architecture; but we cannot at the same time detach our thoughts from the economic aspects of the world in which we live, for they are the governing factors and will continue so to be. To attempt to solve the problem in architectural terms would be mere stupidity. All of our skill in design and construction is utterly without avail, except as we can fit it into the fabric of that better thing in which we have faith and for which we are making the sacrifice. Indeed, the very future of that art which we hold so dear is locked up in the Chance which is before us. Perhaps this may make it clear that the Chance is not for one thing, or one group, or one nation, but for all. It is a world Chance, then, and just as we have found that no nation can be free until all are free (and as we ought thereby to see that no man can be free until all men are free), so we must understand that we are only part of a world which cannot be right until the whole is made right. The chain of nations is no stronger than the nation which is the weakest link. The whole moves forward no faster than the slowest. Merely to seize upon the Chance as ours alone would gain us nothing. Any bigness of strength or wealth to which we might attain at the expense of others and through selfish use of the Chance would only bring the whole structure in ruins about our heads. That is what Life

*The National Being. By A. E. (George Edward Russell).

has written on the wall of history, over and over again. It is that message which the Chance reveals to us, and nothing else. The letters are so large—how can we fail to read?

Our problem, however, is our own, even though we cannot solve it by ourselves. Let us look backward for a moment and survey one aspect of it in certain figures. Not architecturally, as we are so prone to do when we scan the disorder of our communities and lament the evil which seems to have fallen upon our time, but by striving, harder than we have ever striven, to cut our way through the discouraging symptoms and come at the real disease. Let us begin with the Thirteenth Census of the United States, which will tell us, in economic terms, the whole story of those growing pains which so dismay us when we think of art. There the ethnologist may trace the tale of the colossal migration and the process of race fusion which has been characterized as the "melting-pot" of men. There the economist may read the story of our mounting wealth and of our equally mounting poverty. It is the pity of pities that this laborious work may not be reduced to elementary form and be used in our schools to make the real picture of our country. Its facts should form the basis of discussion between all men and women who really care deeply about the vague ideal which we find so difficult to formulate in words, but which still attaches us to our land so strongly. Ah! that vague ideal! What a task it is to reduce our cumbrous political and economic terminology to words of human import! Yet, unless our national ideal can be translated into words which deal with the everyday lives of men, women, and children, it lacks the foundation upon which we can rear any structure that will be either beautiful or durable.

Let us be humble as we look upon the structure we have raised, and remember that it is not with pride that we should contemplate our vast charities and philanthropies, but with humiliation. They are in themselves a signal confession of our failure to set free the channels through which life must flow if it is to attain to dignity and beauty. In the great epic of America we have been thrilled with the first coming of the pioneer. As he took his way westward into the depths of the wilderness, we have journeyed with him, breathless, in the great adventure. Is there not then a profound significance—a deep reproach—in the fact that where we once tingled with joy over the picture of the rude "home," the family "fireside," the welcoming "hearth-fire," the sheltering "roof-tree," we are now content to dismiss the picture from our minds and utter platitudes about "housing"? We even include it in our philanthropies and consign to the pathetic field of charity that which we once glorified as the very essence of our American spirit and courage—the quest of a home!

Bearing these things in mind let us return to the Thirteenth Census, and particularly to the chapter entitled "Ownership of Homes," for here we are confronted with facts which seem to be a denial of one of the elements that once helped to make up our national ideal. For a whole century at least the United States was the goal of the landless and the houseless of all nations. Some weeks since Mr. Roosevelt uttered a warning over the decline in the number of owned farms and the consequent increase in tenant-farmers. No one who has studied this question in the last decade has ignored its deep significance, but the same fact is equally patent when we study the house. Here, ownership by the occupant has declined in a far greater proportion than has farm ownership. The census of 1910 tells the story in the table on the following page.

The figures for Alaska and Hawaii are of the greatest interest, because they reveal the swifter strides of the same transformative process of ownership in an earlier stage. The difference in the ten-year periods is marked by great descents. In the United States we note a slight increase in home ownership, other than farms, for the period from 1900 to 1910. This is traceable to the middle sections of the country and is probably due to economic causes connected with the first stages of industrial expansion. On the whole, there is every reason to believe that the Census of 1920 will show a further decline, rather than a temporary increase such as that to which reference is made. This assumption, however, is based upon the opinions of those who have studied the question deeply and also by reading from the history of land development throughout the world.

As to the causes which have produced this result there can be but one general answer.

AREA AND CENSUS YEAR	ALL HOMES						FARM HOMES						OTHER HOMES					
	Per cent of total				Per cent of owned homes		Per cent of total				Per cent of owned homes		Per cent of total				Per cent of owned homes	
	Owned	Rented	Owned free	Owned encumbered	Free	Encumbered	Owned	Rented	Owned free	Owned encumbered	Free	Encumbered	Owned	Rented	Owned free	Owned encumbered	Free	Encumbered
UNITED STATES																		
1910	45.8	54.2	30.8	15.0	67.2	32.8	62.8	37.2	42.5	20.3	67.7	32.3	38.4	61.6	25.7	12.7	66.9	33.1
1900	46.1	53.9	31.7	14.5	68.7	31.3	64.4	35.6	44.5	19.9	69.0	31.0	36.2	63.8	24.7	11.5	68.3	31.7
1890	47.8	52.2	34.4	13.4	72.0	28.0	65.9	34.1	47.3	18.6	71.8	28.2	36.9	63.1	26.7	10.2	72.3	27.7
ALASKA																		
1910	65.2	34.8	64.2	1.0	98.5	1.5	90.5	9.5	90.5	.....	100.0	.....	65.0	35.0	64.0	1.0	98.5	1.5
1900	80.8	19.2	80.5	0.3	99.7	0.3	(1)	(1)	(1)	(1)	(1)	(1)	80.7	19.3	80.5	0.2	99.7	0.3
HAWAII																		
1910	13.1	86.9	11.4	1.7	87.3	12.7	30.1	69.9	27.3	2.9	90.5	9.5	11.9	88.1	10.3	1.6	86.7	13.3
1900	19.1	80.9	17.6	1.5	92.3	7.7	69.9	30.1	64.4	5.5	92.2	7.8	17.1	82.9	15.8	1.3	92.3	7.7
PORTO RICO																		
1910	56.7	43.3	55.1	1.5	97.3	2.7	88.5	11.5	84.5	4.0	95.5	4.5	45.4	54.6	44.7	0.7	98.5	1.5

(1) Per cent not shown where base is less than 100

Under our economic system we have denied the political and social ideal upon which the nation was founded. We have refuted democracy by beguiling ourselves with crude attempts to solve it in political terms, the while we gave ourselves unbridled license to exploit our land and all that it contained with no thought of what might be the ultimate effect upon ourselves as a nation and upon the democracy we professed to seek. The result we shall have to reckon with. Landlordism has steadily increased until we are in a fair way to actually repeat the very cycle from which men of other nations wished to escape by coming hither. It was an inevitable outcome of the individualism which has passed current for freedom, and constitutes a national acceptance of the doctrine that the whole welfare of the nation is subservient to the right of the individual to pursue his path as he pleases. We have struggled to curb this individualistic wilfulness by legislation, but without appreciable effect. War comes to us with a flaming warning. It tells us that the Whole Welfare must take precedence over the rights and wishes of the individual.

It tells us this by pointing to the spectral figure of national death standing across our path. The figure has always been there. It is always standing across the path of every nation. One by one it has gathered them in since Time was born. It bore away that glory of Greece, the fragrant beauty of which still fills us with awe and reverence. Egypt and Babylon had gone before. Then came Rome, the Gothic Age, the Renaissance—and all are gone. Today, by the light of that flaming torch which carries horrible death and desolate destruction before it, we see the age-old figure looking silently in our faces. Yet we believe in our national destiny so deeply that we are willing to lay down our lives rather than that death should bring that destiny to an end. But Death does not want us, as a nation. Its will is that we should continue to live in full acceptance of our mission and our task. It will only swing the scythe when we have shown by our national life that we have not fulfilled our destiny. Then it will take us, whether we go down unassailed, save by our own inherent weaknesses, or in a supreme but futile struggle against something in which life has renewed the ardor of that purpose which we once had. It is the unconscious perception of such a fate which has led so many men to exclaim: "This war will be the saving (or the making) of the United States." Their realization of this is shadowy and obscure. It is almost wholly within the depths of their subconscious being. They feel instinctively that we must change much if we are to carry out the purpose to which they cling with so sublime a devotion and yet which is almost as obscure, in their conscious minds, as the dim and haunting knowledge that somehow or other we have lost the way, and that we shall find it again through War. It is all vague because it has not been thought out, for thinking on these things, in Peace, is the last task which men permit to engage their minds. War supplies the stimulus and also

shows us the cost of our failure to think. But the processes by which we attain clearness of thought and fearlessness of analysis cannot be summoned by a wish. They die through disuse and may not be called back. Yet "thought is the chief glory of man," and it is upon clear thinking that nations win their right to endure.

But we shall fail disastrously if we do not see that the silent figure is pointing to the disease that is within us, as it is within all nations. It is that with which Death would bring us face to face. It is that which we realize vaguely. If we care to know this, we can learn it plainly by analyzing the fact that modern war does not depend upon individual valor. Instead, we have entered upon a struggle of mechanism against mechanism, and that which we call victory will lie with the side which puts forth the greatest industrial energy. It is our discovery of the colossal need of ships and more ships, of guns and more guns, which also discovers to us the fact that our ability to manufacture is limited by the conditions under which workmen and their families live. This has always been so and always will be so, but War gives us a standard by which we may measure the loss involved in the national disease of wretched houses—of abominable houses.

In Peace, we do not try very much to measure this national loss in any terms. We know vaguely that it is there, but human life has not yet attained to economic stature and dignity, and so we do not care to know the loss. War makes us far more careful of our men, as soldiers, than we are of them as workers. We know that soldiers cannot be as easily and quickly replaced as workmen, and thus they assume a definite value. Slowly, here and there, little by little, in Peace, it is true that we have begun to compute the economic waste of disease, of accidents, of fire, of incompetence, of degeneracy, of crime, of insanity. By these efforts we perceive the economic value of manhood and womanhood to a nation. War forces this perception to a maximum which we do not get in Peace, because it sets before us a task which compels us to face it with economic vision. We have a daily national expenditure made for a common purpose. Every day of delay means a loss which can be computed in terms of money. The daily waste could be computed in Peace, if only we cared. War makes us care! All life assumes a fuller value, both human and economic. Why should it ever have a lesser value? If life and the conditions which govern it become our anxious care in War, why should they not be our more anxious care in Peace? For what other reason does the state exist? What more vital task has it than to interfere when its citizens set up a condition which destroys life, not only physically, but spiritually? But this is the function with which no state has ever grappled successfully. All have put the sanctity of property ahead of the sacredness of life.

Thus, in coming back to life and living conditions, we return to the House, for it is in large measure the prime governing factor in all that pertains to our physical existence. But in examining its history in our land, during the last two hundred years, we find that we have all unconsciously traversed the path of landlordism which the founders of the nation marked out as the very one to be shunned. The time has come when we must decide whether we shall go on or whether we shall try to discover a way out.

If we ask whether it is best, in any country, that the land and the buildings should be owned by a minority which inevitably grows smaller and smaller, we may safely answer that it has never yet yielded national stability. If, however, we assume, as so many do, that it is the unavoidable result of the struggle between men whose abilities are so unequal in carrying on business, industry, and commerce, then we must admit that life consists merely of an endless and hopeless repetition of cycles, each with its débâcle and rebirth. But does the faith that these cannot and ought not to be prevented still claim so large a body of adherents, now that we are in the throes of the most violent convulsion the world has known—when we can see more clearly than ever before through eyes to which science has lent a new visionary power?

It is upon our answer to this question that the problem of building houses for workmen depends for the right solution, and it is this which also gives such emphasis to the importance of dealing rightly with the present dire emergency of shortage in houses and the consequent congestion to which so many thousands of our workers, with their wives and families, are condemned. War has made this so vital a question that we must now face it whether we

will or no, but we cannot in any way find the right solution without asking ourselves these questions; they weave themselves into the figures in the Census with an insistence which almost implores us to find the answer.

Can it be true that the instinct for possessing a house has become a declining factor in our life? Has the acceptance of the rented substitute, in a steadily increasing measure over a long period of years, supplanted that desire to an extent which indicates its permanent passing? Do we admit that the "efficiency" of our life demands subservience, for the great majority, to a landlordism which cannot be escaped? Must we pursue to its cataclysmic end a system which decrees that the workman must relinquish his wish to own a home in order that he may conserve to himself the largest possible measure of economic freedom? The facts offer relentless evidence of the condition to which we have arrived, and the right solution of what we have pathetically termed the "industrial housing" problem depends utterly upon our resolve to study the problem with open minds and with all the facts squarely before us.

In general there are two main solutions, differing perhaps in method only, each of which has its own ardent advocates. One is based upon the premise that we must continue every form of ownership through the minority system until the state takes it over. This means governmental ownership of all land, ultimately, and a resulting control which will put an end to the appropriation of the unearned increment by the individual, end the disasters of land speculation, and make all land-tenure subject to right use for the common good. The other insists that we shall break up minority ownership, including that which takes the form of landlordism, by democratizing industry and thus conferring economic freedom upon all workers. The negation of the question is found in the answer of those who wish to perpetuate the present system and who adhere firmly to the principle of "vested rights." Perhaps this way will make them see that no system is imperishable and that the larger meaning of democracy will compel further rearrangements, such as those which have taken place in England, in Germany, in New Zealand, and even in our own country, where recognition of the problem has manifested itself in our regulatory acts governing the use of property and the kind of buildings which may be built.

In trying to convert that larger meaning of democracy into terms of everyday life, we shall, however, have to face the dual problem. We cannot concern ourselves solely with the body of the state. We must give equal, even greater, consideration to its soul—to that soul which can be no greater than the sum of our own souls. We must ask ourselves fairly and squarely, without cant, hypocrisy, sophistry or casuistry, what kind of men and women do we intend to make in our offices, shops, factories, mines, and fields? What kind of wives and mothers do we intend to make in the homes of those workers? What kind of children do we intend to make in the desolate monotony of our urban streets and amid the tawdry ugliness which blights our communities, large and small, as with a plague? No nation has ever asked or sought the complete answer to those questions. Yet that is the first answer we must seek. There is no larger meaning to democracy until we do seek it. It is the only worthy concept of our right to existence. Until we have fearlessly, and with the purest patriotic fervor, searched out all the facts in our national life, and bravely grappled with and destroyed every cancerous growth, there is no solution of any problem, and all our palliatives do but heighten the fever of unrest under which we labor—the same fever which has swallowed up empire after empire, kingdom after kingdom, state after state.

Yet, as we contemplate them lying stark and cold in their physical death, we are made aware of the immortality of their soul. The fragments of their life which have come down to us in art and letters are only messages of their soul to ours, so rich in their import, so frail in their being that we treasure them tenderly as the most precious of our inheritances and cry out with bitter anguish when the hand of man ruthlessly shatters the vessel in which their beauty is imprisoned. Is that message no more than a passing emotion?

How are we to cultivate the soul of our land that it shall bear such fruit? Where lies the key with which we may unlock those latent yet potent deposits of national life, in which alone can be nurtured the flowers of a superior civilization? We cannot search for the key in any museum, or university, or church, or in

any political institution or form of government. No! It is amid the mazes of our modern mechanistic development that we must look, in our factories, our shops, our mines, our fields. In the great highways and byways of commerce and industry, of invention, of engineering, of transportation, in the wonder of the aëroplane, the automobile, the telephone, the blast furnace, the ocean liner, the dynamo, the rotary press, the awe-inspiring process of making a watch, of tunneling the Hudson, of bridging the St. Lawrence. Into all of these things we have poured the treasure of our soul in a sublime effort to reduce matter to the service of mankind, and we have let our soul go awandering because we forgot the man in the process!

In the driving processes of production, we failed to count the cost of our forgetfulness of man, which, unchecked, means national death. No period in history has ever made so brilliant an achievement in the service of men—none has ever more thoughtlessly, ruthlessly, and brutally inflicted suffering upon mankind. For we must remember that suffering is more acute when it is long drawn out and when men see and ask why their life and the life of their children should be broken and swallowed up, unlived, in the process of making others comfortable. Such suffering, which means spiritual starvation, embitters the springs of our national being with doubts, suspicions, and disloyalties.

In War, we think in terms of human beings. We do not try to measure the misery of Belgium, of Servia, of Poland, in dollars and cents. We measure it by anguish of mind, by suffering of soul, by the weeping of women, the hunger of children, the agony of fathers, the crushing of Life! We are struck to the very heart with a mounting groan of human beings crying out in the pain of that which is worse than death. Can we not think in these terms in times of Peace? Can we not learn to think of industry in terms of human import?

It is not that we wish to make the struggle easy. We want it to be hard—even to the breaking-point—so that life may be full of flame and fire. But we want the reasons for it to be fine and full of beauty. We want all life to be lived in its richest fullness and to make its uttermost contribution to the life of today and of tomorrow. Be not misled into thinking that such a standard of measurement has no connection, save a sentimental one, with our economic structure. No graver error could ensue than to dismiss the thought as one without practical value, for in freeing life for this service we also multiply its economic usefulness a thousandfold! As we raise the standard of quality in men, so do we inevitably raise the standard of quality in all that they make and buy and use. No unexplored depths of our economic house offer so rich a field for adventure and recompense as the dark cell in which we long left the soul of the nation! But, if we are to seize our Chance and find that soul, we must approach all problems over a new path, and it is in trying to make such an approach that we shall endeavor further to study the problem of building houses for workmen, both in War and in Peace.

"I do not put my faith," says Tagore, in his preface to Paul Richard's "To the Nations," "in any new institution, but in the drainage of those stagnant moral pollutions which give rise to poisonous vapor. For this we are to look to individuals all over the world who must think clearly, feel nobly, and act rightly, and thus become the channels of universal truth. For this truth once introduced goes on with its own living creation, overcoming all hindrances. Our moral ideals do not work with chisels and hammers, but like living seeds in proper ground spread their roots in the soil and their branches in the sky without consulting architects for their plans. What is necessary is purity in thought, and feeling, and will, and the rest will follow."

(To be continued)

Government Aid to Housing in the Light of Foreign Experience

By FRANK BACKUS WILLIAMS

WITH the sole exception of the United States, all the progressive countries of the Western world—Great Britain, France, Germany, Italy, little Belgium, Holland and Denmark, far away Australia—and many others that we are inclined to regard as less advanced—Spain, Roumania, India, Chile, Cuba—have for many years, as a part of their normal peace policy, given public aid to the housing of those classes in the community requiring small dwellings at low rates. The reason why this policy has become so general is because everywhere in the civilized world there is a scarcity of dwellings of this character, which the efforts of the commercial builder, supplemented by those of the philanthropist, have failed to relieve; and government aid seemed to be the only remaining solution of the problem.

Before the War

The aid which European governments have given to housing in times of peace has been continued, and in many cases increased, during the present war. That this has occurred is most remarkable, in view of the unprecedented demands upon the resources of these governments which the war has made. The war seems to have brought home to Europe as never before the need of proper housing for all classes in the community and the necessity of government help in obtaining it.

Prior to the beginning of the war in Europe, in spite of the fact that the need of the cheap house in this country was acute, and the prospect that private initiative would supply this need adequately was at best remote, there seemed to be little probability that our government would give financial aid. The reason for our failure to adopt the remedy regarded as necessary by practically all the rest of the world was twofold: In spite of much expert opinion here in its favor, we did not as a people regard housing as an activity in which our government should engage; and we did not believe that, however desirable it might be, we could in this country legally adopt such a policy.

The Effect of the War

The effect of the war upon the housing situation in the United States has been very marked. Soon after the struggle began in Europe, the cost of materials and labor, and the rate of interest and profits, rose sharply. The effect of these increases varied greatly in the different parts of the economic field. The production of goods for immediate consumption, although decreased, continued to be sufficient to meet most of the immediate and pressing needs; since the consumer paid for these goods at once, their price could at once be increased to meet the higher cost of production; and the fear of lower prices of material and labor after the war did not lessen the output. In the field of housing, however, the situation was radically different. A house is constructed to last many years, during the whole of which period, if an adequate return on the investment is to be obtained, adequate payments for its use must be coming in. In housing, therefore, lower construction costs after the war, and the competition of cheaper houses which it would ensure, would make houses built at present prices a losing venture. The result of this possibility was therefore an almost entire suspension of construction of the more moderate-priced houses.

Soon after the war started, European governments began to place huge war orders in this country. The filling of these orders necessitated the enlargement of many existing factories and the building of new ones, partly in localities already built up, partly in places where there was no provision whatever for housing. The corporations receiving these orders, and the localities where they were situated, neglected at first to make anything like adequate provision for the large numbers of workmen who, with their families, would be necessary in the conduct of the business; and later, on account of increased costs and increased demands of every sort, were utterly unable to do so. The resulting hardships to the workingmen and those dependent upon them, and the social unrest, disorder and crime, inevitable under these circumstances, which ensued, are so familiar to the readers of these columns that they need not be restated.

The Situation in the United States

Recently, since the United States Government has entered the war, it has enlarged many of its works, built new ones, placed large orders with existing factories, and given contracts to corporations, necessitating the building of new factories, all without provision or regard for the housing of the labor essential to these undertakings. Already the result has been greatly to aggravate a situation which was very grave before, and, unless relief on the huge scale commensurate with the existing and threatened evils is speedily provided, the cumulative result will be intolerable. It is in this crisis that earnest students of social conditions in this country and the general public are asking themselves more seriously than ever before whether or not this country should, perhaps, as a part of its normal activities in times of peace, perhaps only as a war measure, adopt the policy of government aid, state or national, in the housing of its working classes of more limited means, and, if so, whether it is possible under our law to do so. It is the legality of such a policy, and the best methods in the light of foreign experience of carrying it out, with which this article is concerned.

Financial aid, given by the Government to housing or any other activity, involves the use of public money. This money in this country must be obtained by taxation.

The consideration of the legality of Government aid to housing in the United States is therefore the consideration of the legality of the use of public money and of the power of taxation for that purpose.

The Field Conflict of Federal and State Authorities

In a federated government like ours, certain matters of national importance are within the jurisdiction of the United States, and others, of local importance, are entirely within the control of the individual states, or the local governments subject to them. Normally, housing within the separate states is exclusively a matter to be dealt with by state laws. Thus, prior to the entry of the United States into the war, the housing evils due to the placing of war orders from abroad in various localities were a matter of state concern. The only power which the Government of the United States would seem to have in such questions is that of investigation and advice. Thus, although the cultivation of the soil in the various states is a state matter, the United States has a Department of Agriculture which, by its researches and its advice given to agricultural colleges and individual farmers within the states, has done a work of great importance. There is need of similar assistance to the municipalities of this country, not only in housing, but in city and town planning and many other municipal affairs; and the National Government is the authority best fitted to render such assistance. The suggestion has been made of late that the United States should have a department or bureau of local affairs, with power of investigation, publicity, and advice. Actual, direct financial aid to remedy housing evils within the states with which as a government the United States has no relation would seem to be beyond the legal power of the central government.* Is it within the power of the states?

As a general proposition it is well settled that a state may raise money by taxation, appropriate money, or authorize any local government within its limits to raise or appropriate it, for any public purpose but not for private use. To the layman it would seem clear that money employed to assist in providing a necessity like houses, when otherwise they would not be forthcoming, or in providing them at a more reasonable price for a class that otherwise would not be able to obtain them, was used for a public purpose, especially when it is universally admitted that the home is essential, not only to physical, mental, and moral well-being, but to good citizenship, and therefore to the very existence of the state. In many of our states, however, the courts have decided that aid to a private person, in his private affairs, is not a public use of money, even in those cases in which this private advantage is for the welfare of the state. The decisions, however, seem to depend upon what, at various times in the past, has been, and has been admitted to be, public policy rather than upon reasoning that has any intrinsic soundness. For instance, it has been held that a municipality may be authorized, under existing state constitutions, to supply the citizen with light and heat in his house, but not with coal. Recent decisions of the Supreme Court of the United States, too, have held, contrary to this state doctrine, that the promotion of a private use may be so evidently for the public interest as to be public. These decisions do not overrule the decisions of the states, sovereign in the interpretation of their own constitutions (except in so far as they may infringe the Constitution of the United States), but only tend to weaken them.

*The National Government has, however, under legislation passed in 1916, established farm-loan banks for the purpose of lending money to associations of farmers in the various states.

The Massachusetts Experiment

The state of Massachusetts, since the war in Europe began, has thought it necessary to pass an amendment to its constitution in order, tentatively, and on a small scale, to undertake state housing, and Pennsylvania has appointed a commission to consider the advisability of doing likewise. These states are undoubtedly wise in amending their constitutions before attempting, ever so slightly and tentatively, to extend aid to housing; and it is probable that other states, wishing to adopt such a policy, will follow the same course.

Powers of States

Amendments to the constitutions of the states, authorizing public aid to housing, to be valid, must be in accordance with the Constitution of the United States, as interpreted by the Supreme Court of the United States, and that court will sustain them only if it holds that such expenditures may fairly be said to be for a public use. It seems evident that the Federal court would so decide for two reasons: The decisions of that court already referred to indicate that this is its opinion; and, moreover, in deciding what may be upheld, under state authority, as a proper use of public money and the power of taxation, the court has uniformly paid great respect to the judgment and will of the state, as expressed in these enactments and the decisions with regard to them. Indeed, a profound student of the subject, after a careful examination of the cases available, has found that, "In its decisions of this question the Supreme Court [of the United States] has never overruled the decision of a state court that a given purpose, for which state taxes had been levied, was public in character."*

The amendment of state constitutions is a much easier and quicker process than a similar change in the constitution of the United States. Nevertheless, it is evident that if state aid must await the passage of amendments to state constitutions, and legislation under them, aid from this source will not be available in the present crisis. The central government, as we have seen, has probably no power to give such aid in time of peace; does it possess that power in time of war?

The Federal Government and the War Emergency

Under the national constitution it is the Government of the United States which is given the right to declare and wage war. Ever since the great decision by Chief Justice Marshall of the Supreme Court of the United States, in the case of McCulloch vs. Maryland† it has been unquestioned law in this country that the powers necessary and proper to carry into execution the powers expressly given by the constitution, or, as Marshall puts

*Prof. Frank J. Goodnow in "Social Reform and the Constitution," The Macmillan Co. 1911. p. 295.

†4 Wheaton (U. S.) 316.

it in one passage in his opinion, all rights "incidental to the power and conducive to its beneficial exercise" are as much granted as those expressly enumerated. The legal question whether it is necessary and proper for the United States, in time of war, to give its aid in order to secure proper housing conditions of the people directly, or indirectly employed by it in war preparations resolves itself, therefore, into a question of fact. Previous practical and legal decisions of this question, based as they necessarily were upon the situation as it existed before August, 1914, are out of date; it must now be regarded in the light of the radically different situation as it exists at present. So viewed, there would seem to be but one answer to it. Labor is now, as always, an essential part of the productive process; a provision for the reasonable needs of labor is a part of the industrial plant essential to the prompt and economical production of equipment for war use; a fair treatment of labor, in this as in other respects, is essential to the welfare of labor and of the community; private initiative, whether that of labor or that of capital, does not and cannot, under present conditions, supply this requisite. Therefore, it is not only "conducive to the beneficial exercise" of the war power, but "necessary and proper" to its efficient exercise that this requisite, like any other, should in default of any other means of supplying it, be furnished by the Government as a part of its preparation for and conduct of the war.

If it be admitted, as many are now inclined to admit, that a remedy for the more serious housing evils connected directly or indirectly with the conduct of the war must come from the National Government, it nevertheless remains true that there are serious difficulties and disadvantages which threaten us if we adopt as a remedy the granting of the aid of the National Government to industrial housing. These difficulties and disadvantages, however, may in large part be overcome by the choice of proper methods of extending this aid, and in the absence of experience on this subject in this country, much may be gained by the study of foreign procedure.

One difficulty in all government undertakings is the absence of those incentives and restraints incident to private initiative. This is especially marked in enterprises involving small details in large number and variety, such as the building of many individual houses of small size, in many different localities, for different classes of tenants and owners, the designs of which should vary to fit the varied individual needs. This difficulty has been met abroad by the policy, becoming more and more general as time and experience have proved its value, of making loans for buildings rather than actually constructing them. These loans, in peace times at very low rates of interest, are granted to corporations, in England called public utility companies, which agree to limit their dividends to 4 per cent or 5 per cent and to devote any surplus to new construction. Such corporations are able and compelled to give close attention to details and thus keep their rates and prices at a minimum and still remain solvent, and in so far as they themselves build, to adapt construction to individual needs and tastes. In some cases the government simplifies its task still further by lending to a few large corporations, which in turn lend to the smaller ones.

In this country a few companies similar to the foreign limited dividend companies have been formed at various times, and individuals and groups of corporations have founded or financed them. They are not, however, general here. Perhaps the building and loan associations, so numerous in the United States, could be induced to undertake a share of the work, and, in the present dearth of houses, with the advantage of sufficient government aid and encouragement, no doubt corporations for the purpose would be founded in greatly increased numbers, not only by public-spirited persons, but by enlightened industrial corporations embarrassed in their work by lack of such facilities for labor. From many points of view the system of the recent Federal Farm Loan Act, under which the Government, through banks created by it, loans directly to associations of farmers in the various states, would be advantageous in the field of industrial housing. A plan under which government loans were made to associations of laborers would not only eliminate intermediaries but would tend to check the increase of landlordism, which has been found so formidable an evil in Europe and which is growing so alarmingly in this country.* To this plan, however, there is the serious objection, referred to later in this article, that unless modified and adapted to its new use, such a plan tends to lessen the mobility of labor.

Methods of Financing

In peace times the various European governments have lent money to limited dividend corporations at from 2½ to 3½ per cent. In England, I am told, the rates have now risen to 5½ and even 6 per cent. The amounts advanced in peace times in the different countries have been all the way from 50 per cent of the value to 90 per cent of the cost of the house and land. In England the proportion advanced by the Government was in peace times usually about two-thirds of the cost or value, and, I am told, as a war measure, the amounts have been increased to 90 and even 100 per cent (and more) of the cost. It is probable that we in this country at this time, if we adopt any such methods of aiding housing, will be compelled, under the industrial and financial conditions now prevailing, not only to advance the entire cost, but to agree to allow the companies to write off a portion of it, as has been done in various ways as a war measure in England, for, otherwise, after the war, when construction has become less expensive, the companies would be compelled to repay more than the worth of the houses. Such an arrangement would still be advantageous to the Government, for the values of the houses, if publicly owned, would decrease just the same; the plan suggested would secure to the Government the gains incidental to private initiative, and if the companies were bonded or the share-holders were made individually liable to the amount of their subscriptions, the Government would be sure of repayment of the amounts due it.

Another danger which the policy of public loans, rather than public construction, tends to obviate, is the lessening of private construction which public competition usually causes. The Government is not obliged to rent or sell its houses at the market rate, and often in its attempt to relieve the situation as much as possible, or on account of

*See the chapter on Home Ownership in the Thirteenth United States Census.

political pressure, accepts less than the market return, covering up the loss, perhaps, by juggling with the figures. The fear of this unfair competition discourages and greatly lessens private building, and, thus, often government assistance, unwisely given, decreases the available housing supply rather than increases it; for the number of houses publicly built will always be very few in comparison with those due to private enterprises. Where, however, the Government lends to private parties for construction, this danger is, to a considerable extent, avoided.

One exception to the growing tendency abroad to aid housing conditions by loans, rather than by construction, is in the housing of the Government's own employees. In this field, national, state or provincial, and city governments have always followed the plan of themselves building houses for sale or rent to those whom they employ, national or state governments often lending to cities to enable them to pursue this policy. It is probable that our Government would be compelled, to some extent at least, to build the houses for those whom it directly employs, in so far as there is a lack of such housing.

A second disadvantage likely to occur in housing enterprises undertaken by a central government is a lack of adaptation to local conditions, due to lack of local knowledge and control. Abroad this danger is in part met by the policy already mentioned of loans to individual corporations, rather than government construction. In Belgium (in the days before the war) and France, even now, this difficulty is further overcome by the formation of local committees of control. Housing is not only an individual matter but a local one, and should fulfil local needs and conditions in the communities in which the houses are constructed. In these days, when the need of intelligent city and town planning in conformity with local needs and conditions is—in theory at least—so generally recognized, the importance of such conformity will be generally admitted, and, evidently, in a democratic country like ours, local representation is the proper method of securing it. In the limited time at the disposal of the Government in this crisis, it may not be possible or necessary to form local committees for this purpose, as was done abroad in the more leisurely times of peace, to meet the less urgent needs of a more fortunate period. However, this branch of activity of the general Government should at least be in charge of a large committee, so appointed as to be drawn from all parts of the country where the war preparations of the Government have, directly or indirectly, caused a housing famine, a small executive committee, of course, being chosen for effective control.

The Position of the Workman

In any housing policy which we may adopt for the benefit of labor, we must be careful to follow courses which commend themselves to the labor which we are attempting to serve. Employees, in this country and England, feel that by living in houses owned by their employers they are placing themselves in the power of these employers individually; and that by buying homes they are rendering themselves immobile and unable to seek their best interests, wherever this search may lead them, thus putting themselves in the power of their employers collectively. Nevertheless, it is clearly a part of the employer's duty, under a régime in which the employer is responsible for the direction of the enterprise as a whole, to see that the men have an opportunity to obtain suitable housing. In England, a way round this impasse has, to a limited extent, been found by the formation of housing copartnerships in which the laborer owns, not his home, but shares representing it, that he may hold as an investment, or sell, if he moves away.

The laborer in this country is not as yet accustomed to the ownership of a part interest in property, and so has not been favorably inclined toward the copartnership idea. To a limited extent, groups of employers, seeking to do their duty toward those they employ, to secure the advantages to be derived from well-housed help, and to avoid the difficulties arising from the suspicions of the employees that the housing plan is a means of control, have formed housing corporations, with charters so drawn as to prevent any one corporation, or all together, from dominating or using it to the disadvantage of their laborers. In small numbers, too, independent limited dividend housing corporations have been formed. Apparently no sufficient solution of this problem has as yet been found in this country. There is not this difficulty, however, in the housing by the Government of its own employees, for representatives of labor undoubtedly would be given their share of representation in the management of the property.

Hard as it is at all times to extend government aid wisely to the housing of our workers, and especially hard as it is to do so at this time, nevertheless, in this crisis such aid is imperative. War, today, is an industrial struggle, and all experience shows us that a proper provision for the needs of labor, of which necessary housing is the most important, is essential to its success.

The Necessity for Wise Action

In this housing which we shall undertake, we should see to it that the established principles of housing and city and town planning are followed. To ensure this result, the national committee should contain experts in housing and city planning. In this crisis the National Government, with its great power, in its haste and impatience, is all too likely to neglect all such considerations. Already, in many cases, it is locating its works in places where proper provision for housing is difficult and expensive, if not impossible; failing to plan for housing as a part of its general plans; violating plain principles of economical and efficient planning; and inflicting expensive and inefficient makeshifts for all time upon localities powerless, in the present state of public feeling, of preventing the imminent injury. In the keen competition, more severe than ever before in the world's history, which will so surely follow the war, these obvious blunders will cost us dearly. Foreign governments that formerly made these mistakes occasionally are making them no longer. Even in the stress that is so much more severe for them than for us, they are not needlessly, as we are, overlooking the future. There is still time for us to avoid many of the impending mistakes, and the only method of doing so is to proceed on the principles which the experience of the world has proved to be sound, efficient, and economical.

Sixth National Conference on Housing in America

Chicago, October 15 to 17

Legislation establishing minima of mere decency in human habitation and the enforcement of such, even when successful, are like the perfume used two centuries ago by the French dandies to neutralize the bad odors which common soap and water might have removed. Many of the discussions of the Conference, whose sessions were rather prolonged, hinged on just such superficial matters rather than the fundamentals. One did hear less than usual, however, of minimum ceiling heights and window areas and other physical details of the usual housing legislation, and there were some highlights and sparks of hope which promised well for the future.

Mr. Armstrong, of Canada: The problem seems to be not to *cheapen* workingmen's houses but to *increase* workingmen's wages so they may be able to afford *better* houses.

Mr. Parker, of the Massachusetts Homestead Commission: The problem is more than the adjustment of the cost of the house; it is the building of a house which will return the largest dividend in the character of the family, the neighborhood, and its citizens!

Mr. Dana, of New York: Good housing is now recognized as good business rather than philanthropy. The good house must be planned sympathetically and should be good enough for anyone to live in, not merely good enough for the worker. Everyone should have a chance to live not only decently but attractively. Attractive building does not depend on elaboration but rather on good proportions and good color-schemes, neither of which need involve any additional expense over poor proportions and hideous color-schemes.

Miss Marcia Mead, of New York: In reducing the cost of workingmen's homes, we begin at the wrong end. We usually begin with the very minimum of a human habitation and add such flourishes and enhancements as can be afforded. Far better results might be had by beginning with a well-equipped house of good quality and eliminating such things as are not absolutely necessary and which cannot possibly be afforded.

The Conference was getting more hopeful every hour when there came upon the scene a representative of a company selling "ready-cut" wooden houses such as are "made by the mile and sold by the yard," and told us of the remarkable achievement of his company: Until 1916, England had refused to consider the ready-cut wooden house in any way, but such were the virtues of his particular proposition that recently 600 ready-cut houses were sent into England and 600 more were ordered and ready to be sent as soon as boats were provided. It looked as if England had abandoned her partiality for brick and similar materials. He was proud of the achievement. To me it seemed like desecration.

At the evening sessions various reports were made. Mr. Hiss reported that the Government was at work on the solution of the grave problems involved in the industrial housing shortage in this country, and that progress was being made. Miss James gave an interesting review of the housing activities of England, which are being illustrated in the Journal, and Mr. Whitaker's keenly analytical paper on "Housing as a War Problem" was read. Major Starrett gave an interesting talk on the "Housing of the New Army." This was illustrated by moving pictures and lantern slides of the cantonment building operations and was discussed by Mr. E. H. Bennett, who assisted in planning the Rockville cantonment, and by Messrs. John Ihlder and Lawrence Veiller, who were consultants in the housing details of the cantonments.

The last two luncheon meetings were the most interesting and valuable meetings of the conference. The first was devoted to "Chicago's Housing Problems." Mr. George Hooker, of the Chicago City Club, argued that Chicago's housing problems were too big for Chicago, that the housing problems of any city were too big for that city, that proper housing regulation was a national problem and should receive national attention. Dr. Graham Taylor discussed the relation of the house to the neighborhood; how our community institutions—the voting precinct, the school, the church—all were really neighborhood institutions and so, "back to the neighborhood must we hark for the progress of our citizenship and our nation." Mr. T. Arnold Hill made an earnest plea for the provision of special negro housing. He showed by actual figures how the negro was being exploited, how the only houses available to him were those which had been discarded by whites and that, when these houses were given over to negro occupancy, the rents were usually raised 25 to 30 per cent over those of the former tenants. The result of this was, of course, extreme overcrowding with its consequent delinquency, immorality, and disease. Last came Miss Harriet Vittum with her simple dramatic story of "The House and the Delinquent Child." She said that, under the existing housing conditions in the slums of Chicago, young girls—future mothers—must become unmoral if not immoral, that proper housing was absolutely essential for proper future citizenship, and pointed to the significant fact that in Chicago the spot maps for juvenile delinquency, tuberculosis, high death rate, and bad housing, all pretty nearly coincided as to spotted areas.

At the last luncheon meeting, Mr. Lawson Purdy, of New York, spoke on the "Zoning of Cities." In the most simple and lucid way, he discussed the philosophy of zoning, its necessity and its advantages. Mr. Purdy asserted that "it can and must be so regulated that every building should be a sound, stable investment and a suitable working or dwelling-place for human beings," and that "the individual who builds a home in a neighborhood in good faith has a right to say to the community that it should protect him in the use of his home." As to the constitutionality of zoning, it was largely a matter of education of the courts and if, in any state, zoning were found unconstitutional, the thing to do was to change that particular constitution!

Comparing such statements as were made repeatedly by delegates from different parts of the country, the following conclusions may be made from the discussions and reports of the Conference:

(*a*) The housing conditions in our industrial centers, especially those busy with emergency war work, are inexpressably bad (some places report beds being used 24 hours a day in three shifts, this having been going on for months!) and that the prompt relief of this condition is absolutely essential for the content of the workers and our conduct of the war. Labor turnover in some of these centers was reported as high as 240 per cent for the past year!

(*b*) That housing developments should be carried on strictly as a business and not as a charity or philanthropy. That no company goes into housing except as a necessity and last resort. It is extremely difficult, almost impossible, to convince workers that a company's motive in providing houses for its workers is not mercenary. This attitude is largely due to companies who in the past have built houses for the purpose of exploitation and coercion.

(*c*) No decent worker wants or will accept anything for nothing. He wants to be treated justly and fairly and to be given the chance to pay as he goes. "Charity and philanthropy have done more harm than good."

(*d*) The well-built house of good permanent materials is the most economical and stable investment because of the satisfaction given, its low maintenance cost, and long life.—B. J. L.

Chicago, October 15 to 17, 1917

Multi-Family *versus* Individual Houses

II

A REPLY TO MR. HENRY ATTERBURY SMITH BY MR. JOHN IHLDER

MR. HENRY ATTERBURY SMITH, in the September number of the Journal, asks us if we "have ever pushed down to the fundamentals 'of' "this stuff about the individual house for the employee in the industrial town." Presumably we have not, so he pushes for us. But first he asks if we are "sure that the lowest paid in the factory are being housed at all, or are they boarding, rooming, or crowding? If not, they soon will be." Let us assure him at once that there is no "if" or "will" about it; they be. And then, as even the most patient readers and other worms occasionally do, let us turn and ask him for figures to accompany his drawings demonstrating that the poorest paid can be housed in his ideal multi-family buildings at "five families per acre" with "heating, sewage, domestic hot water, lighting, power (for sewing and other light machines)." These are all most desirable, and figures, showing how they may be obtained by the man who earns $15 a week or under, would make us all join the ranks of the late Governor Bliss' "optimilists."

But still we do not gather from all this any indication of why the multi-family house is superior to the single house, except that the accompanying illustrations are of multi-family houses. The argument apparently is contained in the fifth paragraph. "In cold climates how can each family shovel coal, or in warm, have enough energy left after a day's work to look after plumbing, shutters, gutters, and leaders? Why should we foist all this work upon the individual occupant . . . when he or she or both have had a hard day's work in mill or factory or mine, and who are supposed to have a family of children besides? The answer is to be found in the word exploitation at times. . . ." "How can the general run of house occupants know how to take care of their real estate in such manner as will cause it to last and not become a source of expense? Even the most intelligent of us seem not to understand how to make a house hold out year after year. No, the answer is a multi-family house, with expert repairmen constantly on the job, men who like such work, just as other men, like myself, hate it. . . ." There is a little more about tinsmiths and plumbers and painters and garbage incinerators and women to collect rents "and coöperate with the families in regard to their varying necessities."

Surely there never was a more logical and convincing—and entertaining argument than this. Yet, if it were not for the words, "No, the answer is a multi-family house," I would be willing to offer a prize to anyone who could guess what the writer was driving at. Except for those seven words, every contestant would declare that he was inveighing against home-ownership. For everyone would know that single houses may be, and often are, rented as well as sold, and many would know that with single houses central heat, hot water, garbage collection, repairs by tinsmiths, plumbers, painters, and others, are sometimes supplied to the tenant. As for women rent-collectors, one of the best known in the country works in Mr. Smith's own city of New York and the houses under her care are nearly all single houses.

It is to be regretted that Mr. Smith did not demonstrate the superlative excellence of multi-family houses for the families of children whom he mentioned in passing.

JOHN IHLDER.

A Small-House Competition

In connection with the Real Estate and Building Show at Columbus, Ohio, on January 21 to 30, 1918, the Columbus Chapter of the Institute is conducting, in coöperation with the Columbus Real Estate Board and the Builders and Traders Exchange, a competition open to all architects, the subject of which is a house to cost $6,000. There are seven prizes, ranging from $200 to $5. Particulars may be obtained by addressing the Columbus Chapter of the A. I. A., Columbus, Ohio.

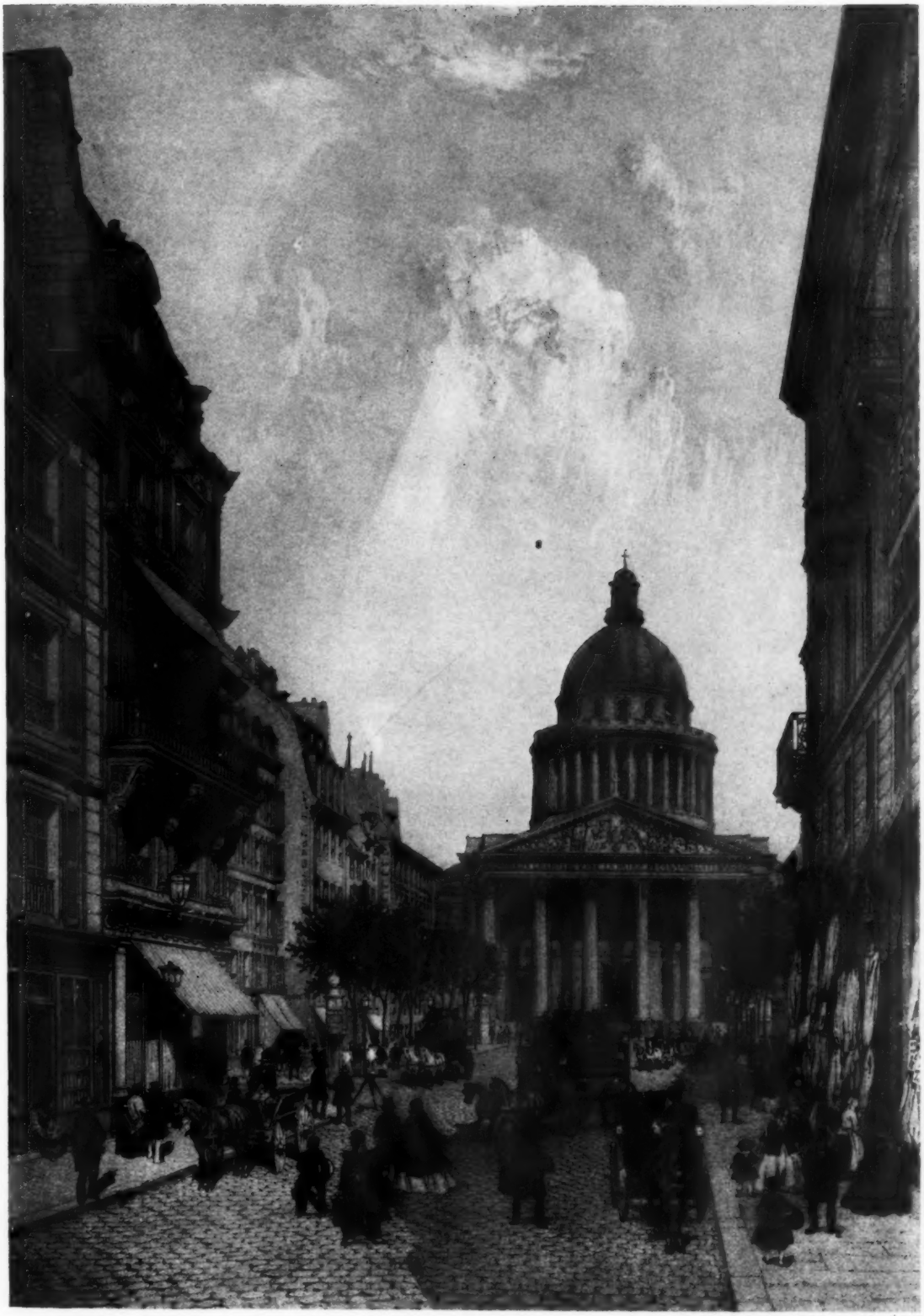
L'intelligence dessine mais c'est le
Cœur qui modèle

Auguste Rodin

A Last Message from Auguste Rodin to the Artists of America

A SHORT time ago when M. Rodin was asked to write an article for the Journal, he pleaded, not so much the temporary fatigue which had brought him to Rome for rest, as the depression under which he suffered keenly. To him the war was a constant sorrow from which he could not free himself, and that it hastened his death, which occurred at Meudon on November 17, scarcely may be doubted. "But I will give you a thought for the Journal," said M. Rodin, "and a greeting to my friends in America." Perhaps if he had written the article we so much wished it could not have more faithfully conveyed his message than the few words which he wrote for us upon a sheet of letter-paper, and which we print in facsimile above.

The illustration at the left is from a very recent photograph of M. Rodin and his wife, taken at the home of Mrs. John Marshall in Rome; that at the right is of M. Rodin in his studio.



SAINTE GENEVIÈVE

OLD PARIS (1860)

Drawn and lithographed by Ph. Benoist, the figures by A. Bayot

THE INVALIDES

OLD PARIS (1860)

Drawn and lithographed by Ph. Benoist and Eugene Ciceri, the figures by A. Bayot

THE CHURCH OF SAINT PAUL AND SAINT LOUIS

OLD PARIS (1860)

Drawn by Chapuy, lithographed by Fichot, the figures by J. Gaildrau

THE TOUR ST JACQUES AND THE RUE DE RIVOLI

OLD PARIS (1860)

Drawn and lithographed by Ph. Benoist, the figures by A. Bayot

THE BOULEVARD AND GATE OF ST. DENIS

OLD PARIS (1860)

Drawn and lithographed by Ph. Benoist, the figures by A. Bayot

PARC DE MONCEAUX

OLD PARIS (1860)

Drawn by Felix Benoist, lithographed by Eugene Ciceri

PLACE VENDOME AND RUE DE CASTIGLIONE — OLD PARIS (1860) — *Drawn and lithographed by Ph. Benoist*

THE LOUVRE

OLD PARIS (1860)

Drawn and lithographed by Ph. Benoist, the figures by A. Bayot

From Our Special Correspondent in England

I. THE STATE AS THE ABSOLUTE AGENT OF CONTROL IN WAR

IN England's program of industrial preparation, visioned in the Defence of the Realm Act, there are four factors of tremendous importance. These warrant emphasis, for three years of experience have demonstrated that it is absolutely necessary for the State to exercise the powers therein set up. Broadly speaking, the first relates to that power which enabled the State to take for its own use whatever it required. That was an arbitrary power, but it was necessary. The long, involved processes of formulating all of the complex conditions surrounding the terms of acquisition and settlement were left for future consideration. It was not until 1916 that the Defence of the Realm (Acquisition of Land) Act, which set up the mechanism for handling this phase of the problem, was passed. This is an important piece of legislation, for in its scope it includes such details as:

> Continuation of possession of land occupied for purpose of the defence of the realm;
> Power to remove buildings and works;
> Power to acquire land permanently;
> Power to sell land acquired under the Act;
> Provision as to highways;
> Provisions as to water, light, heat, and power companies and authorities;
> Payment of compensation and purchase-money;
> Application of building laws,

and sundry other details, together with a schedule consisting of a number of modifications of the long-standing Land Clauses Act. Then Number Six of the Schedule is of vital importance, and I quote:

> "In determining the amount of compensation, the value of the land acquired shall be taken to be the value which the land would have had at the date of the notice to treat if it had remained in the condition in which it was at the commencement of the present war, without regard to any enhancement or depreciation in value which may be attributed directly or indirectly to any buildings, work, or improvements, erected, constructed, or made on, over or under the land, or any adjoining or neighbouring land for purposes connected with the present war wholly or partly at the expense of the State, or, with the consent of the occupying department, at the expense of any person not being a person interested in the land."

The second outstanding factor is that the State immediately assumed the initiative in production of munitions of war, and it is interesting to note that under the broad definition of munitions there are very few things produced which are not so included. The scope, therefore, of State activities in production was very wide. There was no waiting upon individual initiative; land, factories, houses, hostels, heat, light, power, clothing, and transportation were provided. As yet, I have had but a glimpse of this great fabric of industrial preparation, but what I have seen leads me to state without hesitation that we have in America no alternative but to follow a similar course. It was the full and complete acknowledgment of this simple truth that led to the development of the remarkable program of industrial housing. For the moment it does not matter how many people have been housed, or what it has cost, or what proportion of the expense was borne by State, local authority, or private capital. The point is simply this: As rapidly as materials and human energy could be collected and directed toward this end, adequate housing was provided.

The last point of emphasis is that which relates to supervision and control of workers both within and without the factory. Here, by a remarkable system of inspection and supervision the State has extended its powers far beyond any hitherto conceived limit.

Control of Living Conditions

The control of living conditions in towns and cities where it has not been necessary or possible to erect cottages or hostels has been achieved by the passage of the Billeting of Civilians Act, 1917. Through a Central Billeting Board, operating through a local authority and committees, surveys of housing accommodation have been made wherever conditions warranted, and civilian workers have been billeted upon the civil population. I will later take up in detail the operation of this Act. For the present it is important to note that it is possible in some cases to billet a working population equal or greater than the population disclosed by the census. It has been possible through the powers conferred to relieve congestion and increase the capacity in towns where it was assumed that conditions were very bad. While this seems at first thought to be a very drastic measure, yet experience shows that such is not the case, that it may be operated to the actual advantage of the entire civil population, that through the control thus established the exploitation of the worker is entirely eliminated. It has the tremendous advantage of conserving materials, for if workers can be adequately housed in structures already erected, the great saving of labor and materials thus effected is obvious.*

It may be difficult for us to accept the idea of almost absolute State control over affairs which we have hitherto deemed to be essentially private; but I repeat with emphasis my opinion, based upon a knowledge of our capacities and traditions and on a very rapid survey of results accomplished here, that we shall fall short of doing our share, that we shall fail in our purpose, if we in any way hamper or deflect the State from assuming absolute control, and of directing the sum total of our energies toward the immediate purpose of bringing this war to a close. This is the lesson I have learned in my few days in England, not alone from my interviews, but from all whom I meet, and above all from the temper of a people who have learned through three years of bitter experience the meaning of "war!"

London, Oct. 8, 1917.

(*It will be recognized that conditions in the United States both as to the heterogeneous nature of our industrial population and density of settled area would make the operation of such an act more difficult than in England.—THE EDITOR)

II. GENERAL ASPECTS OF FINANCING EMERGENCY HOUSING IN ENGLAND

The following memoranda relate merely to the larger financial aspects and the general policies pursued by the British Government in its effort to provide such housing accommodation as was found necessary to meet the conditions surrounding the manufacture of munitions of war.

No statistics as regards total or unit cost, nor of the total number housed, are included; and the statements made express the consensus of opinion among the many with whom I have discussed this question of policy in the Ministry of Munitions. It is important to note that the opinions expressed are the result of three years of experience, and are therefore of tremendous value as regards the solution of our similar problem.

At the outset, it is of the greatest importance that we should keep clearly in mind the fact that England had already created in the Housing of the Working Classes Act of 1890 and the Housing and Town Planning Act of 1909, a certain mechanism for dealing with the housing problem under normal conditions. At the beginning of the war, therefore, England possessed in this respect certain powers and authorities for which we have no parallel. In a certain sense, surely as far as public opinion was concerned, the additional authority created by the Defence of the Realm Act was but an extension of already existing powers. The program of social legislation extending over a considerable period prior to the war was a very important factor in giving direction to the work of adequate industrial preparation.

In discussing the subject of housing, the Englishman thinks in terms of 'Local Authority' and 'Local Government Board,' and to omit these two bodies from consideration in any program of housing is to him like suggesting the building of a house without a foundation; for we must not forget that prior to the war in these two bodies was lodged the power to provide adequate housing. They were not bodies acting with police powers alone, as is the case with our departments: they could act also in the initiative.

It is therefore quite impossible to translate the terms and conditions under which the housing of munition workers has been accomplished in England into terms which would have anything like a similar meaning in the United States. It is true that, prior to the war, by far the greater proportion, in fact most of the housing had been provided, as in America, by private enterprise—speculative building—and to a lesser extent by industrial capital; but there was always in the background the Local Authority and the Local Government Board with its authority to loan money and initiate where private enterprise failed.

The Failure of Existing Machinery

At the outbreak of the war it was but natural that the Government should first look to the already existing mechanism for the necessary supply of housing accommodation to meet the demands of the rapidly expanding private plants. Efforts were made along this line, but it was soon discovered that it was quite impossible to thrust this burden upon private enterprise, and that, owing to the precarious nature of the investment, nothing was to be had from the speculative builders. Prices were mounting rapidly; labor was scarce; and materials were in demand by enterprises conducted by the Government. In addition to this, Local Authorities were not fully equipped to deal with the problems, for they were far greater in magnitude than had heretofore been conceived.

Even when the Local Authority was ready to assume the responsibility—and the cases were few where it did—the nature of the enterprise was such, and the cost so high, that the Government had no alternative but to give a subsidy, which, in the majority of cases, amounted to 25 per cent of the investment. With the constantly advancing prices there followed a series of bargainings between the Government and private enterprises or Local Authority, as the case may be. A great variety of arrangements was made between the Government and the Local Authorities, both as regards subsidy and the disposition of the property after the war. Even today, the exact basis of transfer has not been standardized. In some cases the Government advanced the total cost of the operation, with the agreement that the entire cost become an obligation of the Local Authority, and that at the close of the war, or within a certain specified time thereafter, the Government would write off a part of the obligation, and thereby reduce the same to an amount which would equal the value were the buildings to be erected at that time. The general policy has been to make such loans mature in forty years.

The details of such operations as outlined above are necessarily complex; yet the principle involved is simple and workable under normal conditions. The idea or purpose in such an arrangement is obvious. If the activity of a Local Authority is involved, and if the financial arrangement is such as will not produce an abnormal increase in rates, or place the Local Authority in an embarrassing financial position, a stimulation of local interest is sure to follow.

The British Government Obliged to Assume the Task

At the outset of the war, it was through the above roughly outlined process that the Government sought to provide the vast amount of industrial housing required. To a certain limited extent this method is being carried on now; but the bulk of housing—all of that in connection with the larger Government-owned plants—is now being produced by Government funds and by governmental machinery. Where the requirements for housing were small, Local Authority was called upon; but wherever the operation was of considerable magnitude, or where conditions were such as not to warrant the erection of permanent structures, the State assumed the initiative and bore the entire cost.

Translating this last statement into equivalent terms related to our political organization, we have this: After three years of experience the British Government has found that the only method by which adequate housing can be provided to meet the incalculable expansion of war industry is to provide all of the funds and initiate the entire enterprise.

I have not, as yet, seen the various housing schemes in operation, but I have examined the details of practically

all that has been done, and I do not hesitate to state that by no other conceivable technique could the remarkable result have been accomplished. Surely, if the result could not have been accomplished in England under the most favorable conditions, what can we hope for in America where the only means of accomplishment is through private enterprise, working under the handicap of excessive costs and with capital being absorbed in other more profitable ways?

The Colossal Character of the Work

Seen in total, as I see this from within the Ministry of Munitions, the undertaking assumes the most colossal proportions—and I grow impatient to actually see this work undertaken in the United States. It represents nothing less than an epoch-making step, not alone from the angle of what it means in housing and in town planning, but in the broader field of social progress.

It is difficult to grasp the magnitude of this undertaking, and it is harder still to realize that all this has been accomplished during a time of stress when the people of England are waging their greatest war.

Hackneyed as is the phrase 'epoch-making,' I use the term advisedly, for it has been my great privilege to have had a glimpse down the vistas thus opened to the future, and to have seen something of the broad outlines of the plans which are surely crystallizing. Writing of this accomplishment here in London, filled with the spirit which this war has brought forth, vaguely sensing the accumulating momentum of social and industrial reform—it is not in the spirit of emulation that I say we must not do less, but rather that I feel, with all of our efforts expended, we shall then fall short of doing our full share.

Memorandum Relating to a Survey of Housing Needs

In discussing the subject of how best to survey the situation as regards the probable needs for housing accommodation which are bound to result from rapid industrial expansion accompanying modern war, and also the formulation of plans for providing for the needs thus arising, emphasis was repeatedly laid upon the inherent difficulties—the impossibility—of forecasting with any degree of accuracy the location of the greatest needs, the total number of workers to be involved, and the extent to which women would be employed in various phases of fabrication.

Experience indicates that these are all variable factors which three years of experience and trial have not eliminated. The program is constantly changing as the exigencies of the time dictate: the employment of women is being constantly extended to new fields of fabrication, with the result that original calculations are constantly upset. The essential elements, therefore, to possess are: first, a central body or authority having powers to initiate and execute the details of this constantly varying program with the utmost rapidity and without the hampering conditions surrounding coöperation with many and sundry departments of the Government, and also, and of equal importance, a mobile reservoir of materials and labor which can be put into immediate use.

London, October 11, 1917.

III. ENGLISH ADMINISTRATION

One cannot fail to be impressed with the fact that among those into whose hands has been given the execution of the various governmental housing schemes, there are few indeed who do not appear fully qualified to perform the service. One and all seem to have a broad grasp of both the social and the economic problems with which they have to deal, and, what is more, they understand quite thoroughly the genuine technique of town building and planning. This knowledge is not academic but is of the sort gained primarily through experience and a keen interest in the question. For the moment, I am not debating the relative merits of dealing with the problem by State or local authority, or copartnership enterprise; I am simply recording the impression that the State or municipal machinery under present conditions in England commands a high degree of ability, and, in consequence, is producing most creditable results.

Private and copartnership building enterprise failed in the war because of economic conditions, but we must recognize that the garden city movement and the copartnership idea, during the several years of struggle and experience in England prior to the war, created a background of public opinion and developed much of the technique which made possible the program and its accomplishment during the war. This is a fact of tremendous importance for us to grasp; one may safely infer that without that background and the technique and power coincidently set up, England, today, in all probability would be building temporary houses or tenements to become, after the war, a barren waste of shacks and slums of the worst sort. Thus, the war has created another tradition which will tremendously raise the standard of workmen's houses and the town-planning procedure involved, for all time. The garden city is to be not a dream but a reality, and in England, restricted as it is in area, the slum and the tenement are to go!

This is a prophecy which well may take years for realization, but if I judge rightly of the trend of public opinion, as expressed in many and various ways, of the widespread agitation for a saner and more wholesome life for all, and of the nature and scope of legislative and educational programs, it would be obstinate pessimism to assume that achievement will not come to pass.

How Shall the United States Meet the Test?

Can we in the United States inaugurate a similar program? This I repeatedly ask myself. For the moment, looking back at our country with its super-individualistic theories of government, our distrust of governmental mechanism, our utter misinterpretation of the real economic norm by which accomplishment should be measured, and the indifference of our Government, federal, state or municipal, to the fundamental values surrounding the question, I am fearful of the future. Must we forever be content with a legislative program which limits its field of activity, in relation to the houses where

wage-earners live, to the exercise of police powers only? Must we continue to assume that progress will be accomplished by restrictions? Effort confined to this narrow conception of government is doomed to failure. By restriction and districting we have made attempts to distribute our population here and there; by technical building laws we attempt to provide proper houses and well-arranged cities. But England has long since learned that elements of this sort have a negative as well as a positive value. They work to retard as well as to advance. England has also learned by experience that wealth is not to be measured in pounds, shillings, and pence, but in the physical and social status of all of her people. If intensive individualism has brought about a division of wealth which makes it impossible for the humblest worker to maintain himself to the economic and social advantage of the nation, then it is the duty of the State to readjust the distribution in such a manner that this absolutely essential element to the whole well-being of the nation will be maintained at maximum value.

The war offered a lesson in economics to England, and she has taken the lesson to heart. Economic factors so grouped themselves shortly after the war began that a large proportion of her workers lacked homes (this was due to the cessation and increased cost of building). There was but one thing for the State to do—provide homes! That the State did at a loss in money if reckoned by the usual methods of accounting—whereas it was really a simple and highly beneficial redistribution of the wealth or resources of the nation; that was all. I admit the socialistic slant in such a statement, but I hold, as I have long held—and the idea has been demonstrated clearly to me over here—that the basic idea involved in any program of raising the standard of living conditions or of applying the principles of town planning must be a recognition by the State of the fact that the problem is primarily a problem because modern industrialism has created false and abnormal values; and that in consequence any real serious effort to restore normal values must in some manner include some readjustments of wealth. By England's program of home-building and of town-planning there has been not only a readjustment in this direction, but a permanence of value has been given to that readjustment not possible by the process of raising wages.

FREDERICK L. ACKERMAN.

Edinburgh, October 29, 1917.

Letters from an American Architectural Student in France

THROUGH the kindness of Mrs. Austin M. Purves, the Journal is permitted to publish the letters of her son, Mr. Edmund Randolph Purves, now in France with the American Ambulance Corps. Mr. Purves was a student at the University of Pennsylvania and went abroad in April of the present year. Many letters of this nature have appeared in other publications, but we believe that the readers of the Journal will appreciate these narratives of the experiences, impressions, and observations of a young member of the architectural profession, who, like thousands of his confrères in England, France, and our own country, have laid down their chosen pursuit and given their services to the cause of the Allied forces. The task of editing these messages from a son to his mother has been one of rare pleasure, for the letters naturally contain much that is of necessity eliminated in their publication. In renewing our expression of appreciation for the kind opportunity that has been conferred upon the Journal, we ask the indulgence of our readers for the sincere effort we have made to keep the letters, as nearly as possible, as intimate as they are in the original.—THE EDITOR.

On Board, April 22, 1917

. . . There is not much to do on board but play bridge. The ship carries no lights and the deck at night is pitch dark. The lifeboats are carefully inspected and the davits unlocked; the guns are in good working order. The course is not published, so that nobody but the captain knows where we are. . . . We have seen no other ships, and we are, to all purposes, "alone on a great wide sea," yet no one knows but that, perhaps, quite near, death is awaiting us in a rather dreadful form. I used to think, after reading those inspiring but misguided sea tales, that to be shipwrecked and picked up in a lifeboat was not only interesting and exciting, but also healthful. I have talked to a fellow who was on the ship that picked up the survivors of an English liner. In one boat there were seven dead from exposure, and the rest, but three, had gone mad and tried to kill their rescuers.

Last night the nervous tension on board reached a maximum, due to the fact that we were nearing land, and also because they have been making more careful preparation for the speedy evacuation of the ship. The lifeboats have been swung out, rope ladders placed along the deck at intervals, and powerful lights have been put up at important places, immediately to be turned on in case of need. It was the night in which most people seemed to have returned to the state of a childish terror of the dark. They seemed to think that the end had come, for they scrambled down to their cabins, put on coats, sweaters, and lifebelts, brought blankets and slept conveniently near the lifeboats. I noticed that the Frenchmen on board (there are a great many) did not do this, so a number of us in the Ambulance decided that the best place was a comfortable bed in the cabin. We reduced our preparations to getting out our passports and taking the lifebelts down from the racks over the beds. After sitting up and talking till midnight, we turned in and had a good night's sleep in warm beds and in negligé.

The Ambulance men (about 60) are in the main a fine bunch, not much of the ne'er-do-well type in evidence; mostly athletic fellows with a common purpose to serve France and the United States to the best of their ability. They represent all degrees of intelligence, from the Middle Western farmer's son who spent a good hour the other evening with a bottle tied to a string, trying to catch

phosphorus, to the New Yorker who lies back and affects to be bored with the whole procedure. I get along famously with my cabin mates, two brothers from Brookline, one in Technology, the other in Harvard.

I met Comte de ——— the first night on board. He was looking for me and I, having found him out, went and introduced myself to him. He is most delightful, about fifty years old, but thin and wiry, with a little moustache, getting gray. He is the kind of Frenchman I have always wanted to meet, ever courteous and pleasant, and seems just as glad to talk to the common soldiers, of whom there are a great many on board, as to the nobility, which is also well represented. I talk to him in my execrable French as much as I can, but I am afraid we have to resort to English too often. His son has just been decorated, and he feels justly proud, as French medals are a little more rare than Iron Crosses.

At our table there are a number of French and Belgian officers, all exceedingly nice and kindly; they do their best to teach us French, yet I must say they probably find the task difficult. One of them, Dr. ———, a cavalryman of the Belgian army, who was in the siege of Antwerp, is very pleasant and was very glad to talk to one who knows something of his own land. He talks often about the beauty that was Belgium's and the courage of that little country. On the other side of him sits the Comte ———, a young Belgian whose father was killed by the Germans at the beginning, and who himself spent a frightful winter in the trenches on the Yser, in the cold and wet, without food and without ammunition. He is very quiet, and one would never dream he was of the nobility, at least not of the nobility that plays so prominent a part in society novels.

April 28

The voyage ended beautifully and on even keel, though for a time it appeared somewhat dubious. The night of the concert they had a lottery, and the next morning there was a second concert, during which an elderly Frenchman recited some original verses, in French, about the grand union of France and the United States. It was quite good but the poor man got so excited and was so overcome that he came near to breaking down, the last verse being practically sobbed out in the lulls of the thunderous applause with which it was greeted.

That night we whiled away the weary hours in a 6 by 10 cabin talking and joking, when someone came down and said there were flashes on the horizon. We then imagined that they must have lighthouses on the land, and that we were off the Spanish coast. Later we found that there had been an engagement of some sort in the vicinity and that we were considerably north of Spain. However, a trifle exciting, for we were running with all lights extinguished, even running lights, but there was a bright moon which lighted everything quite distinctly so that we furnished a good target for any meandering *U*-boat. Thank Heaven, there were none, and the next morning found us safely anchored at the mouth of the Gironde, waiting for a favorable tide, which came at 2 o'clock in the afternoon.

The mouth of the river contained lots of mine trawlers and cargo ships, all painted battleship-gray. The country roundabout was flat but very interesting, a welcome sight, believe me. In the morning, during the wait, the French officers on board gave us a rousing reception and welcome there with speeches by Capt. ——— in French and the Comte de ——— in English; there were cheers, and, as a finale, the "Star Spangled Banner," the "Marseillaise" and the "Brabançonne" were lustily sung. We finally started up the river, which becomes more and more beautiful as it nears Bordeaux. I can readily say that that voyage was one of the most beautiful trips I have ever made in my life. The sun went down gloriously after a perfect day, leaving that wonderful, wonderful twilight. The channel goes very near the shore, so that practically we brushed the trees that border the river. We glided along quietly, uncannily close to old farmhouses, chateaux, vineyards, woods, and towns, scrupulously clean, clustering about some old Romanesque church. It was like coming home again. I have about decided to take a crack at those Beaux-Arts examinations; this old country is good enough for me, the way things look now, although this is only the beginning, and I really know nothing about circumstances or the future. I think we had all better come here and live. You may have a hard time persuading me to come home again.

At suppertime I scarcely ate, but sat watching the river through the portholes, like a continuous cycle of circular "Corots" or "Daubignys." Finally, I could stand it no longer, but rushed up on deck. As I was about to step out of the door, there was a slight jar, and the old S. S. ——— quietly but firmly planted herself on a mud-bar on which we resided until the friendly tide lifted us off again. By that time (about an hour later) it was quite dark, and we continued our way, arriving in Bordeaux at 10 P.M., where we saw the first real signs of war. Quite a crowd met the boat, principally consisting of women and children. (The absence of men is very noticeable.) The gangplank was no sooner lowered than a squad of soldiers, bayonets fixed, marched on board to guard the ship. We were told by the Ambulance man who came to meet us that there were no rooms at all to be had in the town, and that we should spend the night on the boat.

Billy, his two cabin mates, and myself, decided that we had spent as many nights on that boat as we cared to, and also that we would take a chance on getting accommodations. It was then about 10 o'clock, 9 o'clock really, as the "daylight-saving" scheme of setting the clocks ahead one hour is now practised here. (It is an excellent scheme and would greatly benefit the U. S. A. in summer when the days commence early.) So we went on shore and looked for a taxi; there were none. We then looked for a fiacre; there were none to be had, all "complet." Finally we heard some old vehicle come rattling along the quay and ran along to secure it first. It turned out to be a hack which must have been in its prime during the war of 1870, and belonging to the "Chemin de fer d'Etat." We tried to make its driver (also a relic) take us to the Hotel Terminus, but he insisted on the Hotel de France; we did not argue the point but climbed in, thankful to be on land. He finally drove up to that handsome hotel where we found rooms—good rooms with hot and cold running water and real beds and everything. It was "ambrosia." The hotel turned out to be the best in Bordeaux.

The morning in Bordeaux was very interesting. Women car-conductors, motor-women, women everywhere in

men's places. I took a stroll about the town and passed a military hospital. I could not resist the temptation to look in. There were many convalescents wandering about or lying in the sun, all quite cheerful. I passed a smithy where they were busily engaged on munitions. One sees many wounded, blind men, legless men, armless men, men with their faces covered, but no one seems discouraged, and nothing would induce them to part with their uniforms, and many wear medals.

The train left for Paris at 11.05 A.M. Our military passes entitled us to third class, but every one paid the difference and rode second. Nine hours in third, and very third at that, did not appeal to me; moreover, second entitled one to eat in the "wagon-restaurant," which I did. It was good and reasonable. The ride from Bordeaux to Paris is absolutely wonderful, right through Poitiers and the châteaux country, Tours, Amboise, Chaumont and Blois. Every station contains a Red Cross department, and there are nurses and wounded everywhere. I talked (in French) to a Zouave for quite a while. He had two bad head wounds and lost a leg, but he had the "Croix de Guerre" and the "Medaille Militaire," which seemed to console him considerably. They patched him up wonderfully well. One sees soldiers, soldiers, everywhere.

We passed several large prison camps—long wooden sheds with a slight fence around them. The prisoners evidently do not want to escape. We saw many of them working on the railroads. They appeared quite content with their lot, healthy and clean (except their uniforms, which were in rags). They were principally Austrians and Bulgars—the French do not take many German prisoners, for good reason.

At that little junction above Orleans, Les Aubrais (if you remember), we stopped for a while. On the next track was a carload of real live German prisoners. They must have been officers, for their uniforms were quite good-looking and neat. They seemed exceedingly healthy, contented, and cheerful. (I think they had been prisoners a long time.) We climbed out of our carriage to have a better look at them and flaunted American flags in their faces. They laughed at this but did not say anything, just grinned behind their German pipes, which they never removed from their mouths. Before leaving, someone in the crowd gave them some chocolate for which they thanked him courteously. Their French guards seemed to be treating them pretty decently, far better, no doubt, than they in any way deserved. On the way we saw a large Aviation School, truly a wonderful sight, like a huge beehive. There must have been at least twenty machines up in the air at the same time.

We finally pulled into Paris at 9 o'clock and were driven in ambulances to our quarters. They are not palatial, but are quite good—about what I expected. I am not living in Rue Raynouard but in an annex about four blocks away on Rue Lekain. I suppose I will be here about three weeks or more.

Paris is so interesting; just to watch the people on the streets is very absorbing. One sees every kind of uniform (except German)—French, British, Russian, Canadian, Belgian, Moroccan, Anzac, and even, think Heaven, I saw a U. S. Captain today in uniform. There seem to be a good many Russian officers quartered near us.

The women are a sad sight; really none of them are not in mourning, except those of that large mob who ply their trade so openly now. There are many shops for mourning clothes and artificial limbs—quite necessary articles these days. I saw a party of blind officers being led along the boulevards this morning; it was pathetic. There are many "poilus" back on leave, with their helmets and ragged, buttonless uniforms and shoes whose original color is not discernible—far from the conception of the soldiers of a victorious army.

The Louvre is closed. About the most popular place now is the Invalides, where they have all the latest German trophies—aëroplanes and fragments of Zeppelins, trench turrets, mortars and everything.

Somewhere in France, May 8

Twenty-four hours ago I was calmly sitting in Paris, and now here I am in a blasted village, quartered in a shelled house with a peculiar odor in the air (somewhat a cross between a morgue and a manure heap). My bed is beside a shell-hole, and I am in imminent danger of falling into it.

Really, I hated to leave Paris. I could willingly have stayed for two more weeks (as I had expected to). It is the most wonderful city in the world, and the people in it the finest I have ever met. But alas, I have been caught napping. You see, I had expected to stay in Paris at least three weeks, and until I got my uniform, I hated to go about much. To be in Paris without a uniform is to be somewhat of a fish out of water. Paris, in wartime, is a wonderful place. After I was fully clothed in all my regalia, I had to work from 8 A.M. to 6 P.M. on a delivery truck, running errands around Paris—very interesting work. I was to have been laid off in a day or so, and then I would have had all the time in the world to present my letters. When lo! and behold, yesterday noon I got my orders to be ready at 8 A.M. (this morning) to go immediately to the front, and so here I am.

I was assigned to an old Section (Section 4) which is attached to the crack division of the French Army and will be right in the thick of it. I came by train, which is much better than going in an ambulance convoy. It was a beautiful, beautiful ride and intensely interesting, past army posts and aviation centers. It becomes quite exciting as one nears the front. Soldiers, soldiers everywhere.

This little hamlet where we are staying is pretty well knocked up. Over the hills the guns are booming in a nightly "strafe," and everywhere is that peculiar sickening odor of war. Tomorrow, I believe, we move into real dugouts. I have now a tin hat and a gas-mask and make quite an imposing figure.

There is a large base hospital here which I went through tonight. It was a cheerful place. The "poilus" called out "vive l'Amerique" as we went past their beds. I did not hear a single groan in the whole place.

Evening, May 9, Sorting Hospital

The excitement has come sooner than I thought it would. For three hours I sat in a dugout today while 8-inch shells burst within 100 yards. But I will write about that later when I am in some quiet spot, for they are now shelling this village with 3-inch shells, and I can talk about Paris easier.

LETTERS FROM AN AMERICAN ARCHITECTURAL STUDENT

Morning, May 10

I had to stop this letter last evening to come out here to the lines and wait for the "Blessés." It is now 9 A.M. and I have not taken off my clothes since yesterday, nor had any breakfast. One eats and sleeps when one can. I am going to write you about my first two days pretty soon. They have been intensely interesting, dangerous, and exciting, as I almost got a place in the casualty column.

I cannot tell you what a great pleasure it is to meet and learn to know well French gentle people. They are the most charming people in the world. At dinner that night there were: M. de B——, his sister-in-law, her two daughters, her son, and myself. It was one of the best meals I have ever eaten in all my life. They really treated me like one of their family. I suppose that you will be shocked to hear that I wore a soft collar there; but then everyone does with a uniform, even King George and Sir Douglas Haig. Dress suits are absolutely taboo, thank Heaven. I find French people are a great deal more cordial, entertaining, and far better hosts than a great many Americans.

May 12

Last Sunday I had a wonderful time. Comte B——— took me out to spend the day at his brother's château at M———, a beautiful spot. We took the train for about twenty miles outside of Paris and got off at S———, where we were met and driven through the quaint old French town (in which was quartered a regiment of Ammonites) to the château.

The château itself is a splendid example of the period of Louis XIII and the beginning of Louis XIV. The Comte's brother was not there but his sister-in-law was. She is an American and exceedingly nice, and is going to send me a watermelon when they get ripe. The war has, as everywhere, left its mark on the place. The Comtesse and her three children, two girls and a boy, live in one corner of the house. The rest is closed; you see there are no servants to be had. She has only one for that big old place, and that one rather incompetent. Really, these women are remarkable, for she seems to run the town, too, while her husband is away at the front. After a delicious lunch we walked around the Park, which was planted, right up to the walls of the château, with wheat and potatoes. His automobiles are comandeered, also any good horses. I got lots of first-hand information about the German atrocities, French unpreparedness, and the filthiness of the Germans—really indescribable. You can believe all you hear, and even use imagination, and you will come pretty near to the truth.

France, May 14

I have a day off today, thank Heaven, for I have never worked so hard in my life. The working-day here at the front is twenty-four hours long—1 P.M. to 1 P.M. next day, and then a rest. We leave quarters at 1 o'clock, drive out to the posts and carry wounded from there back to the hospital until 1 o'clock the next day, when we are relieved. Then "home," a bath, if one is fortunate, supper and bed, and one sleeps well in spite of all the guns.

It is beautiful, as I sit here on a little hill, with a slight breeze in the shade, looking across the valley at the German trenches, and what is more pleasing still, seeing high explosives from the French guns dropping into them. This may sound blood-thirsty and horrid to you, but then you see I have seen what the Germans have done, and are still doing, and there is mighty little mercy left in me as far as they are concerned. One does not realize over there in America what war is—not in the slightest.

Over here, where there are no money, no comforts, homes desecrated, men dying by the score, men hideously maimed, there is never a word of complaint. "C'est la guerre." It is truly a wonderful privilege to be able to come into contact with such people, where they are striving toward the same goal, and not each one seeing how much he can get out of the other one. And it is a country where little faith is pinned on silvery speeches. It is action and deeds that alone count here. The uniforms are not spick and span, the men don't bustle about in the old-fashioned military way. There is only one ambition here—to do your job well and finish it. There are no parades, martial music, glittering equipment. The French are essentially fighters and workers, not clothes-horses. Everyone is candidly sick of the war, but they realize that it cannot stop yet. It would be wicked beyond all thought to give in now. Yet one cannot feel sorry for the French, and pity them. It would be insulting them to try to console them.

I have met some wonderful specimens of manhood in the few days I have been on this job. One, especially, will always remain fixed in my mind—a young lieutenant whom we brought in with his leg shot off. He was slight, and probably could not have passed the U. S. Army examinations; but there are mighty few men who have his courage. He was pretty badly off himself, but on seeing one of his own men in the ambulance, he was as careful of that man and as anxious about him (although the soldier's wound was the slighter) as if he had been his own son. When an army has men like that in it, it cannot be conquered.

I have been under shell-fire, both with shrapnel and high explosive aëroplane raids, have lived in dugouts, slept right in the trenches, and have seen sights which I hope I will never see again as long as I live. In fact, the only thing I have missed is a gas-attack; but we expect that all of the time, and hang onto our gas-masks as if they were made of spun gold and set with diamonds. My account, however, will have to be brief.

May 17

After a beautiful train-ride through country, now famous, we came to a large military base. These towns are very interesting—soldiers, convoys, big guns going up to the front, and burst ones coming back. From there we rode some 10 miles in automobiles to where the Section (S.S.U.4) was "en repos." This was a little town nestling in a valley in rolling country. We arrived about evening. It was wonderfully quiet, the only signs of war being the ruined houses and the ever-present aëroplanes. Toward sundown, however, the firing began, a continuous thundering over the hills until the walls seemed to shake. I felt somewhat thrilled—a whole lot more than I do now. Really this war makes one unbelievably blasé in short time. I spent the night in a house all blown to pieces. There was a Scotch Red Cross section quartered there also, mostly made up of men who had been either rejected or unable to fight, owing to wounds.

Early the next morning we broke camp and moved to a village near the lines, to enter on active service. It is beautiful here, perched on the side of a low hill, while across a wide valley on the top of the opposite hill are the enemy positions. If any place every looked like Hell, that place does—no trees, no grass, no green, nothing but shell-holes, smoke, dust, and noise, while far above are the German observation balloons, with never-closing eyes. We are in a rather bad position, for the Germans can see every move we make, and generally let one know it by a shell or two. We are up in the loft of a house—very airy and well ventilated, in fact, almost too well ventilated.

I was sent right out as orderly at 1 o'clock. An orderly job is rather hard work. Several cars go out from the town to a point near the lines where they can be well hidden, and then one car leaves them at that point and goes further on to the "boyau," or communication trench, where they bring the wounded to the ambulance. That car drives all the way back to the hospital, and the next car moves up. The orderly never goes to the hospital, but rides back and forth between the "boyau" and the place where the cars are stationed. It is rather a nerve-racking job, as the orderly is continually under shell-fire. The cars usually operate on roads between the batteries and the trenches, and the Boches are continually trying to find the batteries with their fire. This fact makes things rather interesting at times.

On our first run, we went across the valley to a little town which has seen much fighting, some of it hand to hand, for the windows are sand-bagged and have loop-holes, and the bullet-marks are numerous. The town must have been very pretty at one time—orchards, corners, little walls with red tile copings, and quite old—but now the lanes are perfect seas of mud, the walls broken in places, but, strange to say, the orchards were in full bloom, and yet, two years ago, this country around here was desolated.

It was in this town that I first came face to face with the horrors of war. We stopped at the inn, now used as a "poste d'évacuation," to leave our blankets and food. In the little, low-ceiled room used for treating the wounded were five German prisoners, all badly shot up. One died before we left, and another, a mere boy, had a nasty wound in the groin. I felt sorry for him. He was so young, and, in spite of his suffering, he appeared to be pleased to be through the fighting.

We left there and went on up to our post, about a mile farther on, where we found quartered a company of "travaillieurs," the men who do the carrying of the supplies to the trenches—all over forty-six years of age. They certainly were remarkable. They were housed in "abris" made of corrugated iron piping, put up in sections, forming a long tunnel just high enough to accommodate two tiers of bunks. This is well covered with earth, reinforced with logs, and covered with boughs to conceal them from the aëroplanes. There was an old battery place near there which I started out to visit, but I never got there, for at that moment the Germans commenced shelling a little house about 70 yards back of us, and so I had to beat a hasty retreat for the "abri." They kept it up for two and a half hours, at the rate of two shells per minute. These were 8-inch shells and have a killing radius of 100 yards. One can hear them coming, like an express train. There is a terrific bang, and a few seconds later the fragments come whistling past, shooting out from the shell in a cone and traveling for about 100 yards in all directions. After the first shell, I started out to see what damage had been done, but two pieces of éclat hit the other side of the door with a sharp report, so I changed my mind and spent the rest of the time, until the firing was over, under cover.

The Hun is so methodical in his firing that it is safe to go about after one session is over. We went, therefore, and examined the damage. The car had been struck by "éclats," and there was not enough left of the house to tie up in a handkerchief, while the road was so badly cut up that it had to be repaired before we could go back.

May 18

We had supper in the "poste d'évacuation," and while we were eating, the Boches commenced shelling the place with 3-inch shells. They are mean—just a short whistle and a sharp report. The shells fell in a little court across the street, and as they did not change the range, we ate complacently. There is one distinct disadvantage about shell-fire, that is, one never hears the one coming which hits one, because the shells travel faster than the sound.

That night we went back to the "boyau" and started to sleep in the ambulance. One has to sleep with all one's clothes on because a call may come at any minute. The French batteries, which are numerous, started up a terrific firing about 12 M., so we spent the rest of the night in the "abri." Fortunately, I was tired out, or I could never have slept in that place. It was hermetically sealed, and with a troop of ripe old "brancardiers" it had an odor all its own. The next morning we went back to the billets after being relieved. My next trip was a great deal more exciting and harder work and to a different place.

On this occasion the cars were parked in a wood. The "boyau" was further along, about 2 miles; the road there was all in plain view of the German lines. Don't think for a minute that I am any "bullet-biter" or dare-devil. That road was enough to make any one gray-haired. The Germans were combing out the woods, ahead, behind, and beside us, with shrapnel, and to say that I was not scared would be a lie. You get so scared that you are not scared. It may be exciting to go charging up some hill, with shells bursting around you, carrying a gun in one hand and a grenade in the other, and bayonet submissive Teutons. But it is different, and somewhat of a test on the nerves, to go creeping cautiously, oh, terribly slowly, along a road with a carload of "graves blessés" when that road is being treated to intermittent shell-fire. I have seen the effect of shells, both on things animate and inanimate, and I have a great deal of respect for them.

Well, this all has no bearing on my first night in a trench. We got to the "boyau" all right, and, after several trips with "blessés," we waited practically all night long before another one. That was quite a night. The going at night is not so bad, except for the heavy traffic, because so many star shells are sent up from the trenches that the way is pretty well lighted. We lay down in the trench for a while, but could not sleep—too much noise; and soon the Boches commenced searching for the batteries behind us with high explosives, and we retired to a real dugout.

This one was a bird. I took a picture of it as it was very trenchy looking. There was no sleep in there. It was narrow, low and damp, and the bugs—"57" varieties—all colors, shapes, and sizes. It would keep an expert bug-hunter busy for weeks trying to classify them. I myself have never been very keen about insects, as you know. It was too low to sit up in, too narrow to lie across, so one rests lengthwise, with his head against his neighbor's feet.

Toward dawn the Germans planted a good shot in a trench magazine, and we saw some very pretty fireworks. It was the first German shot I have seen that found its mark. At 1.30 P.M. we were relieved, and then I went back and had a sponge-bath, and went to bed. That is an account of my first days; the others are mostly repetitions with variations. Of course, there is lots to tell, but then I forget some things for the moment; some can't be told now.

The Washington State Capitol Group

IN support of the active efforts made by the Washington State Chapter for adherence to the Capitol Group Plan, the following letter was addressed by President Mauran to Governor Lister:

St. Louis, Mo., Oct. 23, 1917.

HONORABLE ERNEST LISTER,
Governor of the State of Washington,
Olympia, Wash.

Dear Sir: May I be pardoned for seeming to encroach upon the prerogatives of the people of the state of Washington to manage their own affairs as they see fit? My sole excuse is the fact that the American Institute of Architects is often looked to as the natural "Defenders of the Faith," when, with that vision which is inherent in the profession, through its training, they see any danger threatening the progress of the architectural development of our great country.

Two years ago the Capital of our country was threatened with a real eyesore in the form of an unsightly power-house in the midst of its carefully conceived park area, and the American Institute of Architects undertook a campaign to prevent such a desecration of our National Capital. Nothing could have been done, I assure you, were it not for the storm of adverse public opinion which broke upon Congress from the Atlantic to the Pacific. The reason for its effectiveness was that our campaign was based upon uncontrovertible facts, which were unappreciated by the laity until vividly pictured by our professional body.

The state of Washington has before it a programme unique indeed in beauty, in financial adequacy, and in enduring merit, and I am writing to express the hope that you and all the people of your great state may see the vision of the future so admirably presented in the circular prepared by the Washington State Chapter of the American Institute of Architects in time to prevent any material departure from the noble plan of which you should be proud.

I beg you will accept this letter, not as an intrusion, but in the spirit of sincerity in which it is written.

Very truly yours,
JOHN LAWRENCE MAURAN, *President.*

PRESIDENT JOHN LAWRENCE MAURAN,
The Octagon, Washington, D. C.

My Dear Sir: I had, yesterday, the great pleasure of reading your letter addressed to Governor Ernest Lister on the question of maintaining the splendid group plan submitted in competition by Messrs. Wilder & White and subsequently developed and perfected by them after months of painstaking study and adopted by the State Government in 1912 after the most careful scrutiny and consideration as the State Capitol Group Plan for the State of Washington.

On behalf of the Chapter, and without official endorsement, on behalf of the unfortunately small minority of intelligent citizenship who view this matter as we do, I thank you. Your letter is so admirable and so in keeping with the high ideals that under your administration the Institute is reaching toward, that the facts should be printed in the Journal to the end that every Chapter may feel assured that the parent body is behind them in all their undertakings where in the spirit of altruism and from sincere feelings of true patriotism their efforts are directed toward obtaining the best expression in the Government buildings for the people. Yours very truly,

CHARLES H. BEBB
President Washington State Chapter A.I.A.

Report of the Public Buildings Commission

The report of this Commission, the date for which was originally fixed at January 1, 1917, and later extended to January 1, 1918, is awaited with keen interest by those who look forward to the presentation of a thorough and comprehensive analysis of the present congestion in administrative quarters in Washington, and who hope that the report will be accompanied by recommendations for the construction of the new buildings which are so badly needed now and for those which will be necessary properly to house the fast-growing activities of the Government. The report has involved a work of the most laborious character, much complicated by the war emergency which forced the rental, by the Government, of a great variety of buildings.

Institute Business

New Members Elected

Delbert K. Perry, New Britain, Conn. Connecticut Chapter.

Frederick C. Lebenbaum, Chicago, Ill. Illinois Chapter.

Clark C. Wright, Chicago, Ill. Illinois Chapter.

Clarke Waggeman, Washington, D. C. Washington Chapter.

Nominations for Officers

To the Secretary of the Institute:

For the office of President of the American Institute of Architects, which is to become vacant at the close of the present year,* the undersigned members of the said Institute do hereby, in accordance with Article IX of the By-Laws, submit their petition for the nomination of Mr. Burt L. Fenner, of New York City.

John M. Donaldson, William B. Stratton, D. J. von Schneider, Charles Kotting, F. J. Winter, Arthur H. Scott, William Reed-Hill, John Scott, James B. Nettleton, and Hugh B. Clement of the Michigan Chapter; Edward A. Crane, John Hall Rankin, John P. B. Sinkler, E. P. Bissell, and George I. Lovatt, of the Philadelphia Chapter.

*By vote of the last Convention, the present officers hold over until their successors are chosen at the next Convention, tentatively fixed for the spring of 1918.—Editor.

Obituary

Frederick C. Bonsack

Elected to the Institute as a Fellow in 1897
Died at St. Louis, Mo., September, 1917

Isaac S. Taylor

Elected to the Institute in 1884; to Fellowship in 1889
Died at St. Louis, Mo., October 28, 1917

A. J. Bloor

Elected to the Institute as a Fellow in 1861
Secretary of the Institute 1874-77; 1881-83; 1887-89
Died at New York City, November 19, 1917

Book Reviews

The Dwelling Houses of Charleston, South Carolina.

By Alice R. Huger Smith and D. E. Huger Smith. 128 illustrations from drawings by Alice R. Huger Smith. Photographs and Architectural drawings by Albert Simons. Limited Edition printed from type which has been distributed. 387 pages. 8vo. $6 net.

If this book serves to remind us of how Charleston has been swept by fire after fire, battered by war, and shaken by earthquake, it also serves to make us thankful for what has been spared. The text, while largely devoted to an account of the families whose houses are described, makes a vivid story of the life of the city, so strangely isolated by the Civil War. The illustrations—of houses, gates, doorways, winding stairways, paneled rooms, mantels, and rambling porches—many from drawings by Miss Smith, make an even more vivid picture of an epoch which still haunts us with its suggestive charm of a more leisurely existence. The book also contains a number of measured drawings, though on a small scale, and makes mention of numerous architectural quaintnesses of practice. It is especially interesting to have recalled to us at this moment the fact that, after the great fire of 1740, the General Assembly of South Carolina fixed the price of building materials and labor for a period of ten years!

Aside from the interest which this work will have for the architect, it seems safe to say that no future student of Charlestonian life can ignore the careful research embodied in its text.—B.

The New Tax on Professional Incomes

Mr. Frank E. Davidson, of Chicago, a member of the Institute, has made the following computation of the income-tax law as applied to professional incomes. No official interpretation seems to have been made, although those who appear to be expert in this matter do not agree with Mr. Davidson. Possibly, in the next number of the Journal, we shall be able to state the case definitely. Mr. Davidson's computation is as follows:

If an architect is a single man and has an income of $10,000, he must first pay 8 per cent on the difference between $6,000 and $10,000, or $320, but in computing his tax under the two regular individual income-tax provisions of the old law and the new, this tax of $320 would be deducted from the income of $10,000, leaving $9,680, from which must be subtracted the exempted amount of $3,000 provided in the old law, on which he would pay the 2 per cent normal income tax. This tax of 2 per cent on $6,680 would amount to $133.60. Then, under the new income-tax law, the professional man with the $10,000 income would have to pay another 2 per cent on his income over the limit of $1,000 set in the new law, or 2 per cent on $8,600, which would amount to $172.60. His total income tax will, therefore, be $627.20. A corporation having a net income of $10,000 will be taxed as follows: Normal tax 2 per cent on $6,000, or $120, plus an additional 2 per cent on $8,000, as per the terms of the new revenue law; in addition to these direct taxes an additional surtax will be levied of 1 per cent on $2,500 and 2 per cent on $2,500, making the total income tax for the corporation equal to $355.

Thus, by the plain provisions of the income-tax laws, a corporation having an income of $10,000 must pay an income tax of 3.55 per cent, while a professional man or individual having identically the same income will be compelled to pay an income tax of 6.272 per cent.

Structural Service Department

D. Knickerbacker Boyd, *Associate Editor*

METAL, PLASTIC AND OTHER PRODUCTS

CONTENTS

Previous issues have dealt with all main structural features of a building; the last four issues have treated all forms of mechanical equipment; this issue treats of products and devices, the installation of which would occur at or about this stage of progress in the construction of a composite building. The wood trim and finish having been included in the wood issue, when lathing, plastering, metal windows, doors, trim, hardware, and other metal and plastic products, including roofing, have been treated herein, there will remain only the painting, finishing, and glazing to complete the structure. These, with miscellaneous items, will be covered in the December issue, or No. 12 Serial, which will also conclude the first year's review.

INDEX TO SUBJECTS TREATED IN THIS ISSUE

(For index of materials previously treated, see the General Index, page 582)

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11C Plastic Materials and Products.
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11D Metal and Plastic Products.
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11D3 Floor Systems, Partitions, Furring, etc.
11D4 Floor Treatments and Coverings, and Paving.
11D5 Terms Relating to Plastic Products, Chiefly Plastering.
11D6 Lathing and Plastering.
11D7 "Ornamental and Decorative" Work.

11A Societies, Associations, and Allied Interests

The publications and activities of the following bodies and of any of the governmental departments concerned with matters affecting metal, plastic and other products treated, will be mentioned wherever possible in connection with the main subject heading or subdivision under which they would naturally fall.

1. American Society of Civil Engineers
   Secretary: Chas. Warren Hunt, 220 W. 57th Street, N. Y. City.
2. Illinois Society of Architects
   Secretary: John Reed Fugard, Harris Trust Building, Chicago, Ill.
3. Western Society of Engineers
   Secretary: Edgar S. Nethercut, 1735 Monadnock Block, Chicago.
4. Engineers' Society of Western Pennsylvania
   Secretary: Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh.
5. American Society of Municipal Improvements
   Secretary: Charles C. Brown, Wulsin Building, Indianapolis, Ind.
6. American Chemical Society
   Secretary: Charles L. Parsons, Box 505, Washington, D. C.
7. American Institute of Metals
   Secretary: W. M. Corse, 106 Morris Avenue, Buffalo, N. Y.
8. Architectural Iron and Bronze Manufacturers
   Secretary: W. A. Morrison, 331 Madison Avenue, New York City.
9. National Association of Ornamental Iron and Bronze Manufacturers
   President: H. H. Suydam, care of Cincinnati Manufacturing Company, Cincinnati, Ohio.
10. National Association of Sheet Metal Contractors of the United States
    Secretary: Edwin L. Seabrook, 261 S. Fourth Street, Philadelphia.
11. National Association of Brass Manufacturers
    Chairman Standardization Committee: H. N. Gillette, Oliver Building, Pittsburgh, Pa.
12. National Association of Manufacturers of Approved Hollow Metal Window Frames and Sash
    Secretary: Thomas Shean, 2799 Fifth Avenue, Chicago, Ill.
13. American Hardware Manufacturers' Association
    Secretary: F. D. Mitchell, Woolworth Building, New York City.
14. National Retail Hardware Association
    Secretary: M. L. Corey Argos, Ind.
15. National Hardware Association of the United States
    Secretary: T. James Fernley, 505 Arch Street, Philadelphia, Pa.
16. Wood, Wire and Metal Lathers' International Union
    Secretary: Ralph Grandt, 401 Superior Building, Cleveland, Ohio.
17. Associated Tile Manufacturers
    Secretary: F. W Walker, Beaver Falls, Pa.
18. Gypsum Industries Association
    1611 Harris Trust Building, Chicago, Ill.
19. National Association of Master Slag and Gravel Roofers
    Secretary: John A. Duroff, Drexel Building, Philadelphia, Pa.
20. Asbestos Paper Manufacturers' Association
    Secretary: C. J. Stover, Bulletin Building, Philadelphia, Pa

There is also record of:

21. American Electro-Chemical Society
22. American Institute of Chemical Engineers
23. Asphalt Publicity Bureau
24. Sand-Lime-Brick Association
25. International Union of Bricklayers, Masons and Plasterers

Other bodies, interested in the subjects now treated, have been mentioned under previous serial numbers, particularly under Nos. 1 2, 3, and 4.

11B Metals and Metal Products

11B1 *Metals in General*

Considerations here do not include Structural Iron and Steel which were treated in Serial No. 1. Many of the publications listed there, however, are applicable here. See, also, Metal Products 11B5 and, also, Metal and Plastic Products, 11D.

For "Tests of Metals," Watertown Arsenal, War Department, U.S.A., see 1B1*b*.

(*a*) See Proceedings of the A.S.T.M. (1A4*a*) for reports of the following committees, and for papers presented before conventions:
Cast Iron (A.S.T.M.: A3); **Wrought Iron** (A.S.T.M.:A2); **Non-Ferrous Metals and Alloys** (A.S.T.M.: B2).

(*b*) See "Review of Current Technical Literature" and *Journal* of the American Society of Mechanical Engineers (10A1).

(*c*) See index to list of Engineering Articles of Interest, and to papers and discussions, contained in each issue of the Proceedings of the American Society of Civil Engineers (11A1).

(*d*) An investigation has been concluded of the **initial stresses, cause of failure,** and **properties of structural brasses**, an account of which is to be published as a technologic paper. (See *e*, below.) A great deal of this work has been materially aided by the co-operation of brass manufacturers and of users of brass, such as the Navy Department, the New York Board of Water Supply, the City of Minneapolis, the Panama Canal Commission, and others. It is expected that the results obtained will be serviceable in framing specifications for the use of structural brass. (From Report of Bureau of Standards, 1916.)

(*e*) **"Failure of Brass. 2. Effect of Corrosion on Ductility and Strength of Brass,"** Paul D. Merica. Technologic Paper No. 83, U. S. Bureau of Standards. 1916. 7 pp., illus. 5 cents.

(*f*) **"Manufacture and Uses of Alloy Steels,"** H. D. Hibbard. Bulletin No. 100, U. S. Bureau of Mines. 1915. 78 pp. 10 cents. A general statement on the composition and heat treatment of various steels, and their use for special purposes.

(*g*) See **"General Metallurgy,"** H. O. Hoffman. 999 pp., illus.

(*h*) See **"An Introduction to Metal-Working,"** J. C. Pearson. 1916. 126 pp., illus.

(*j*) See **"The Coloring of Non-Ferrous Metals and Alloys,"** Jerome Brandes. Lefax Data Sheet 7–278

(*k*) See **"The Story of Abrasives,"** *Iron Tradesman*, January, 1917.

11B2 *Corrosion and Treatment of Metals*

The references which follow are selected for consideration in connection with the **proper use and care of metals** quite independent of the various sections and articles which are part of the Pocket Books, Handbooks and other publications mentioned under 11D1*g*, which see.

See, also, "Corrosion of Steel" (1F8*a*).

In connection with **sprinkler pipe**, see five N.F.P.A. references listed under 4F1*f*: also, 4F1*h*.

See, also, **"Corrosion of Pipes, Boilers, and Structural Work."** (4F1*g*1.)

(*a*) **"Structure of Coating on Tinned Sheet Copper** in Relation to a Specific Case of Corrosion," P. D. Merica. Technologic Paper No. 90, Bureau of Standards. April 21, 1917. 18 pp. 5 cents.

(*b*) "A Curious Case of **Corrosion of Tinned Sheet Copper,"** P. D. Merica. Paper read before the American Institute of Metals, September, 1916. 12 pp., illus. Contains "Conclusions," by the Bureau of Standards.

(*c*) See "Proceedings," A.S.T.M., for the following:
1. "The **Relative Corrosion of Wrought Iron and Steel,"** H. M. Howe, Vol. VI, p. 155, 1906.
2. "The **Relative Corrosion of Steel and Wrought Iron Tubing,"** H. M. Howe and Bradley Stoughton, Vol. VIII.
3. "The **Value of the Sulphuric Acid Corrosion Test,"** C. M. Chapman, Vol. XI, p. 609, 1911.
4. "The **Marked Influence of Copper in Iron and Steel** on the **Acid Corrosion Test,"** W. H. Walker, Vol. XI.
5. Report of Committee A-5, A.S.T.M., on Corrosion of Iron and Steel, 1917.

(*d*) "To Study **Corrosion of Steel Imbedded in Gypsum and Concrete"** (in connection with work of Committee A-5, A.S.T.M.). *Construction*, July, 1917.

(*e*) "Methods of **Testing the Durability of Pipe under Corrosion,"** F. N. Speller, Part II, "Technical Papers," A.S.T.M., 1916.

(*f*) See "Proceedings" of the American Gas Institute (7A2*a*) for the following:
1. "Report of Committee on **Gas House Piping,"** Vol. X.
2. "The **Installation and Maintenance of Services,"** R. B. Duncan, Vol. IX, 1914, p. 1052.
3. "Proper Specifications for, and Inspection of, **Interior Gas Piping,"** A. E. Turner, Vol. IX, 1914, p. 1311.
4. "The **Installation of Mains and Pipe Lines of Steel and Wrought Iron,"** H. L. Rice, Vol. VIII, 1913, p. 145.

(*g*) **"Relative Corrosion of Wrought Iron and Soft Steel Pipes,"** T. N. Thomson, "Proceedings," American Society of Heating and Ventilating Engineers, Vol. XIV, 1908.

(*h*) See reprints of papers by the A.S.H. & V.E.:
1. "The **Prevention of Corrosion in Pipe,"** F. N. Speller. 1916. 10 cents.
2. "Report of Committee on **Corrosion in Pipes."** 1909. 10c.

(*j*) "The **Relative Corrosion of Iron and Steel Pipe** as Found in Service," W. H. Walker, "Proceedings" new England Water Works Association, 1911.

(*k*) **"Steel Pipe vs. Wrought Iron Pipe in Refrigerating Work,"** P. DeC. Ball, "Proceedings" American Society of Refrigerating Engineers, 1911.

(*l*) "Structural or Mechanical Theory of the **Effect of Rust on Cast Iron and Wrought Iron and Steel,"** R. C. McWane and H. Y. Carson. Paper before American Foundrymen's Asso.

(*m*) See the following "Lefax Data Sheets:"
1. "Oxides and Other Coatings for the **Prevention of Corrosion of Iron and Steel,"** L. C. Wilson, *Engineering Magazine*, February, March, and April, 1915. (5–286.)
2. **"Copper in Steel—Its Influence on Corrosion,"** D. M. Buck. 1913. (5–31.) Digest of paper read before American Chemical Society.

(*n*) **"Corrosion of Hot Water Piping in Bath-Houses,"** Ira H. Woolson, *Engineering News*, December 3, 1910, p. 630.

(*o*) "Observations upon the **Atmospheric Corrosion of Commercial Sheet Iron,"** E. A. Richardson and L. T. Richardson, *Metallurgical and Chemical Engineering*. Paper read before American Electro-Chemical Society, October 15, 1916.

(*p*) **"Corrosion in a Steel Gasholder Tank,"** William Wilson, *Journal of Gas Lighting*, London, England, September 12, 1916.

(*q*) "Theory of the **Corrosion of Steel,"** Leslie Aitchison, *Journal*, Iron and Steel Institute, Vol. 93. Illus.

(*r*) **"Influence of Carbon and Manganese upon the Corrosion of Iron and Steel,"** Robert Hadfield and J. N. Friend, *Journal*, Iron and Steel Institute, Vol. 93. Illus.

(*s*) "The **Corrosion of Metals,"** Wm. E. Bibbs, Richard H. Smith and Guy D. Bengough, *Mechanical Engineer*, May 5, 1916. Report to the Institute of Metals.

(*t*) **"Effect of Rust on the Rate of Corrosion,"** James Ashton, *Steel and Iron*, May, 1916. Paper read before American Electro-Chemical Society.

(*u*) **"Repairing Split and Corroded Pipe with an Oxy-Acetylene Welder,"** *Engineering-Contracting*, May 3, 1916. Illus.

(*v*) **"No Rust in Galvanized Steel Tower** at Iloilo After Twelve Years," J. L. Harrison, *Engineering Record*, Jan. 6, 1917. Illus.

(*w*) "The **Design of Hot Water Supply Systems to Minimize Corrosion,"** F. N. Speller, *Engineering News*, Feb. 13, 1913.

(*x*) "The **Relative Corrodibilities of Iron and Steel,"** J. Newton Friend, "Proceedings" Faraday Society, London, Vol. XI.

(*y*) In **"Practical Steam and Hot-Water Heating and Ventilation,"** (10C4*y*), see Chapter VI., Alfred G. King.

(*z*) In **"American Stationary Engineering,"** W. E. Crane, see pp. 54–81.

(*aa*) In **"Modern Plumbing,"** R. M. Starbuck, p. 263 and following.

(*bb*) **"The Decay of Metals,"** Cecil H. Desch, *Scientific American Supplement*, September 16, 1916. From Transactions, Institute of Engineers and Ship-Builders in Scotland.

(*cc*) **"Physical and Mechanical Factors in Corrosion,"** Cecil H. Desch, *Scientific American Supplement*, May 6, 1916. Paper read before the Faraday Society.

(*dd*) **"Electrolytic Corrosion of Iron in Concrete,"** Charles F. Burgess, *Journal of the Association of Engineering Societies*, 1911, p. 397.

(*ee*) "Fireproof Construction and **Prevention of Corrosion,"** William Sooy Smith, *Journal of the Association of Engineering Societies*, 1898. p. 930.

(*ff*) See Cosgrove's "Principles and Practice of Plumbing," second revised edition, for Chap. XVI on "Solvent Power of Waters on Pipes and Tank Linings."

(*gg*) In Cosgrove Appendix, see Chap. XXXIII, "Life of Cast Iron Pipes in Earth" and "Life of Wrought Iron Pipes in Earth."

11B3 *Protective Coatings*

See the Reports of Committee D1, A.S.T.M., on **"Protective Coatings for Structural Materials,"** referred to in January Issue (1F8) and subdivision **"Protective Coatings"** (1F8*b*); also "Manufacture of Oils and Pigments" (1F8*c*).

(*a*) **"Rustless Coatings;** Corrosion and Electrolysis of Iron and Steel," M. P. Wood. 432 pp., illus.

(*b*) **"Iron Corrosion, Anti-fouling and Anti-corrosive Paints,"** L. E. Andes. 283 pp., 62 illus. Tranalated from the German.

(*c*) **"Protective Coatings for Structural Materials,"** R. S. Perry, *Journal of the Association of Engineering Societies*, 1909, p. 399.

(*d*) Many of the publications referred to under Roof Coverings, etc. (11D2), will be found to treat of methods of protection and painting. The subject will also be treated under Serial No. 12.

(*e*) See Industrial Section, p. xxii, for Solvay **Rust-Resisting Paints**, The Solvay Process Company, and the Semet-Solvay Company.

11B4 *Electrolysis*

See, also, **"Electrolysis"** (6N).

(*a*) **"Electrolysis in Underground Pipes,"** *Canadian Engineer*, Oct. 12, 1916. Abstract from Report, U. S. Bureau of Standards.

(*b*) **"Insulation as a Means of Minimizing Electrolysis** in Underground Pipes," E. B. Rosa and Burton McCollum, "Proceedings," American Gas Institute, Vol. VI, 1911, Part 1, p. 233.

11B5 *Metal Products in General*

Next to questions concerning the corrosion and preservation of metals and the determination of the most appropriate kinds for especial uses and the proper treatment and care of each, comes the matter of the **thickness and weight of metal** to be used for any particular product.

(*a*) The Editor wishes to express the opinion that a most desirable thing for architects and others specifying the use of metals to have constant access to would be a **chart** illustrating graphically and minutely the gauges for metals, the numbers for wires and other forms and factors in the fabrication of metal products. Such a presentation, accompanied by descriptive data, would afford opportunity to visualize the material to be incorporated and provide equable conditions in estimating and a ready means of ascertaining compliance with specificational requirements that could work to the advantage of all those interested in adequate and proper installations. The words "gage" or "gauge" apparently also need standardization.

(*b*) An interesting illustration of the possibilities of such a chart will be found in the Manual of the American Railway Engineering Association (1A9c) where, on page 305, appear cuts in section and elevation (shaded) showing the exact sizes of No. 1 to No. 20 gage steel wire by American Steel and Wire Company gage with tables of weights and comparative sizes of all wire gages.

(*c*) **The U. S. Standard Gauge for Sheet and Plate Iron and Steel, 1893:**

Kent's "Mechanical Engineers' Pocket Book," 1916, states:

"There is in this country no uniform or standard gauge, and the same numbers in different gauges represent different thicknesses of sheets or plates. This has given rise to much misunderstanding and friction between employers and workmen and mistakes and fraud between dealers and consumers."

"An Act of Congress in 1893 established the **Standard Gauge for sheet iron and steel** (which is given). It is based on the fact that a cubic foot of iron weighs 480 pounds."

"A sheet of iron 1 foot square and 1 inch thick, weighs 40 pounds, or 640 ounces, and 1 ounce in weight should be 1/640 inch thick. The scale has been arranged so that each descriptive number represents a certain number of ounces in weight and an equal number of 640ths of an inch in thickness."

"The law enacts that on and after July 1, 1893, the new gauge shall be used in determining duties and taxes levied on sheet and plate iron and steel; and that in its application a variation of 2½ per cent either way may be allowed."

"The Decimal Gauge:—The legalization of the standard sheet metal gauge of 1893 and its adoption by some manufacturers of sheet iron have only added to the existing confusion of gauges. A joint Committee of the American Society of Mechanical Engineers and the American Railway Master Mechanics' Association in 1895, agreed to recommend the use of the decimal gauge, that is, a gauge whose number for each thickness is the number of thousandths of an inch in that thickness, and also to recommend 'the abandonment and disuse of the various other gauges now in use, as tending to confusion and error.' A notched gauge of oval form (shown in cut), has come into use as a standard form of the decimal gauge."

"In 1904 the Westinghouse Electric and Mfg. Co. abandoned the use of gauge numbers in referring to wire, sheet metal, etc."

(*d*) Kidder's "Architects and Builders' Pocket Book," 1916, states:

"The Brown and Sharpe gauge (B. & S.) is commonly used for designating size of copper wires (see p. 1424), also for sheet copper and brass. The American Steel and Wire Company uses the old Washburn & Moen gauge for all their steel and iron wire and also for wire nails. The sectional areas for this gauge are given on page 1426. When placing orders for sheets and wire, it is always best to specify the weight per square or linear foot or the thickness or diameter in thousandths of an inch. The gauge for steel wire, used by the J. A. Roebling's Sons Co., is given on page 403, and the circular-mill gauge on page 1387."

(*e*) The U. S. Bureau of Standards has issued:

"Standard Gage for Sheet and Plate Iron and Steel," 1911, Circular No. 18, 4 pp. 5 cents.

(*f*) See **"Standard Gauges" of Sheet Metal and Wire**, "Lefax Data Sheet" 6–120.

(*g*) For recommendations of the Associated Metal Lath Manufacturers as to gauge and weight of metal lath, see Lathing and Plastering (11D6).

(*h*) See, also, 11B12 as to **standardization of metal gauges**, and 11D2*j* for weights of roofing tin.

(*j*) The subjects of gauges, weights, and sizes of metal sheets and other data pertaining to all kinds of metals and various processes of manufacture and use will be found in the following Handbooks and Pocket Books which are here listed separately from others which have been placed under "Metal and Plastic Products" by reason of containing information about equally in detail as to each.

1. Mechanical Engineers' Pocket Book, Wm. Kent. 1916.
2. Mechanical Engineers' Handbook, Lionel S. Marks. 1916.

The above are independent of the Proceedings and other publications of the various societies, associations, and other allied interests. Lists of such publications and of many periodicals and textbooks will be found in:

3. Kent's Pocket Book, facing p. 1.
4. Mark's Handbook, p. XXI.
5. Kidder's Pocket Book, pp. 1703–1712.

(*k*) See "Transactions" of the American Institute of Metals (11A7) for proceedings, papers, discussions, and all Bulletins, which contain many valuable abstracts of metallurgical literature.

The American Institute of Metals was instrumental in forming an Advisory Committee to confer with the Bureau of Standards. This Committee consists of representatives of several technical societies and meets at Washington semi-annually to suggest to the Bureau practical problems in the solution of which it might be interested and equipped to aid. The results of these conferences are recorded in the "Transactions."

(*l*) **"Old and New Methods of Galvanizing."** Alfred Sang, "Proceedings" of Engineers' Society of Western Pennsylvania; November, 1907, 36 pp.

(*m*) **"Industrial Applications of Zinc,"** Ernest A. Smith, *Mechanical Engineer*, Oct. 6, 1916. Abstract of paper read before the Institute of Metals.

(*n*) The U. S. Bureau of Standards has had a considerable amount of testing to do, mainly for the Government Departments, of plated or coated metals, especially galvanized iron. A systematic study of the manufacturing limitations and properties of this class of material was considered desirable and has been begun, and, together with a committee of the American Society for Testing Materials, the experimental data and experience are being accumulated for forming specifications for galvanized materials, including sheets, wire, and pipe.—From Report of Bureau of Standards, 1916.

(*o*) The **commercial galvanized sheet product** in today's market has a base of **steel and not iron**, and specifications should either call for galvanized steel, if the regular commercial product is desired, or else should be **explicit** with respect to the iron or whatever other metal, or metal base, is to be used, for the words "galvanized iron" by themselves have, through common usage and general acceptance, come to apply to the existing steel product.

(*p*) As to the **painting of galvanized metal**, the Secretary of the National Association of Sheet Metal Contractors (11A10) says in a letter "Galvanized cornice and other work should not be painted until the surface has been somewhat roughened by exposure to the weather. Two very thin coats of red lead and linseed oil will prevent the paint subsequently applied from peeling off.

11B6 *Pipes, Conduits, Wires, and Drawn Products*

Attention is directed to the last two paragraphs of the General Suggestions of the National Electrical Code (6C1), urging architects to make provision for the channelling or pocketing of buildings.

The final tests and inspection of all enclosable pipes, conduits, and other metal products before they are lathed and plastered should not be overlooked.

(*a*) As of much interest in connection with this Section, see "Corrosion and Treatment of Metals" (11B2).

(*b*) For **Automatic Sprinkler Pipes**, see, "Fittings, Contents, and Protection Equipment" (4F); also **"Sprinklers and Fire Protection"** (9K).

(*c*) For **Gas Piping**, see "Piping Buildings—Materials, Methods, and Cost" (7E).

(*d*) For **Plumbing Pipes**, see "Water Supply, Storage, Utilization and Incoming Pipes" (9D); "Plumbing Installations in General" (9G); "Outgoing Pipes, Sewage Disposal, and Public Health" (9L).

(*e*) For **Pipes in Connection with Heating**, see "Boilers and Heating in General," (10C); "Pipes, Valves, and Fittings" (10J).

(*f*) For **Electric Conduits**, see N. E. Code, 6C2 and 6E1*cc*, and for "Standard Symbols and Charts," 6E4*b*.

(*g*) The Editor of the S. S. D. in an address before the N. A. of M. S. and H. W. Fitters (10A4) said:

"Why not coöperate to get rid of words in specifications which say, but do not mean, 'very best quality,' and the 'or equal,' in favor of calling for the brands, thickness and weight of pipes and for the various other products by the several names which will be acceptable?

"More and more frequently a distinction is being made as to quality in materials of building construction, and stronger encouragement is being given to those producers who, in spite of rigid competition, adhere to their standards of manufacture and make names for themselves under established brands. By conducting an educational campaign along these lines you will oblige architects to use names and brands and standards of quality in their specification requirements which will assist them and reputable contractors, manufacturers, and producers in furnishing owners with the best that the market affords—when that is what they are paying for."

(*h*) **"Steel in Wrought-Iron Pipe:** A New and Quick Etching Test for Its Detection," *Iron Age*, May 11, 1916. Illus.

(*j*) "Manufacture and Characteristics of **Wrought Iron Pipe**," W. A. Phillips, *Gas Age*, May 1, 1916.

(*k*) For data on **Lightning Rods**, see "Lightning Protection" (4G).

(*l*) **Fences.** See the Manual of the American Railway Association (1A9*c*). The Section on "Signs, Fences, and Crossings" has a complete glossary of terms relating to fences, gates, etc., and contains Specifications for Standard Right-of-Way Fences, including materials and erection, with recommendations as to galvanizing. Contains, also, illustrations and tables of gages for plain wire, barbed-wire, and barbless fencing, and a specification for concrete fence-posts.

(*m*) **Nails.** In this Manual will also be found illustrations of the actual size of standard "wire nails" with tables.

(*n*) For **"Nail Knowledge,"** and "More Nail Knowledge," see 5G4*e*.

(*o*) For leaflet entitled **"Nails,"** see 5K7*d*.

(*p*) For **Cast-Iron Pipe** for House-Drainage, see Industrial Section, 3d cover.

(*q*) For sherardized **rigid steel conduit**, see Industrial Section, p. xix, National Metal Molding Co.

11B7 *Windows, Doors, and Metal Trim*

(*a*) The following should be consulted before equipping building walls or partitions with windows or doors:

1. "Regulations of the N.B.F.U. for the **Protection of Openings in Walls and Partitions against Fire.** Recommended by the N.F.P.A. Edition of 1915" (4C3*b*).
2. Underwriters' Laboratories' "Specifications for Construction of Tin-Clad Fire-Doors and Shutters" and:
3. "Hollow Metallic Window Frames and Sashes for Wired Glass" (4C3*b*).
4. Also, "Specifications: **Tin-Clad Fire-Doors and Shutters**, 1914" (4C3*e*), Inspection Department, A.F.M.F.I. Co's. This specification is likewise applicable to the installation of sheet-metal doors.
5. Also "Beltway Fires" (3A7*a*4).
6. For **Fire-Doors and Shutters, Frames for Fire-Doors and Shutters, Frames and Sash for Wired Glass, Fire Window-Frames**, see "List of Inspected Mechanical Appliances" of the Underwriters' Laboratories (3A6*b*).
7. For same, see, also, **"Approved Fire Protection Appliances"** of the A.F.M.F.I. Co's (3A7*a*3).
8. For Hardware for the above, see 11B11*b*.

(*b*) For "Standards for **Counterbalanced Elevator Doors**," see Underwriters' Laboratories (3A6*h*).

(*c*) The Committee on Construction of the National Association of Manufacturers of **Approved Hollow Metal Window-Frames and Sash** has been working with a committee appointed by the Laboratories, and this joint committee has decided to test various constructions, some of which have passed through tests, apparently with great success, others are still to be put through. One thing which has already been definitely and officially accomplished is the abolition of a mullion which the Laboratories demanded should be placed between two units, if the opening was larger than 5 x 9 feet. The old style mullion was made of a 5-inch I-beam, surrounded by concrete and enclosed in sheet metal.

The new mullion now made, if non-bearing, is composed of two channel irons made of No. 16 gauge, which are tied together with a strip of No. 24 gauge galvanized iron. This permits the two windows to be set back to back and eliminates, not alone the expense of the old-style mullion, but also permits the distance from glass-line to glass-line, in this new mullion window, to be 5 inches narrower than the old style. As in modern construction the glass area in a window-opening is of the utmost consequence, this advantage is very great.—(Extract from a letter from President Fred De Coningh.)

(*d*) **"Fire-retardent Windows,"** S. H. Pomeroy. Address delivered before New York Chapter of N.F.P.A. Printed in *Construction* for June and July, 1917.

(*e*) **"The Casement Sash,"** James C. Plant, *Journal of the Society of Constructors of Federal Buildings*, September, 1916. Illus.

(*f*) **"Fire-tests of Doors and Windows** at Underwriters' Laboratories," M. L. Carr, *Construction*, July, 1917. Illus.

(*g*) For reference to experiments to determine the relative heat lost through single- and double-glazed wood, steel and hollow metal sash, and many other matters of interest, see **"Air Leakage, Guarantees and Formulæ"** October Issue, 10M.

(*h*) For **Metal Weather-strips**, see 10M14 and 15.

(*j*) For **"Almetl" Fire-doors**, see Industrial Section, p. xxiv, Merchant & Evans Co.

11B8 *Mail Chutes*

(*a*) The U. S. Post Office Department issues "Section 720, Postal Laws and Regulations" under an "Order No. 148 of the Postmaster General," dated Aug. 8, 1905, which describes the kinds of buildings in which mail chutes may be installed, the location therein of same, and the essential characteristics of construction.

(*b*) Copies of these regulations may be also obtained from the Cutler Mail Chute Co., which, in a recent circular letter, calls attention to a letter from the Post Office Department, stating that it will not in future waive the rule requiring the Mail Chute Box to be placed within fifty (50) feet of the main entrance of a building.

(*c*) See Industrial Section, p. xii, Cutler **Mail Chute** Company.

11B9 *Laundry Chutes*

(*a*) For reference to Glass Enameled Steel Laundry Chutes, see 9H1 and **Industrial Section**, p. xxiii, Pfaudler Co.

11B10 *Appliances, Fixtures, Fittings, and Devices*

(*a*) For **Electrical Appliances**, see "Apparatus, Appliances and Installations in General" (6E); **"Electric Elevators and Dumb Waiters"** (6F); **"Heating, Cooking** and Other Appliances and Devices" (6J).

For **Electric Switches** and Wiring Devices, see Industrial Section, p. vi, General Electric Co.

(*b*) For **Gas Appliances**, see **"Gas Appliances in General"** (7H); **"Space-Heating by Gas"** (7J); **"Water-Heating by Gas"** (7K); **"Cooking and Hotel and Domestic Appliances"** (7L). See Industrial Section, p. xxxv, for **Automatic Gas Water Heater**, Humphrey Co.

(*c*) For **Radiators, Registers, and Grilles**, see 10K.

(*d*) For **Stoves, Ranges and Dryers**, see "Warm-Air Heating, Stoves, Ranges and Dryers" (10D).

(*e*) For **Plumbing Fixtures and Fittings**, see "Fixtures and Fittings" (9H), and, "Bathroom and Laundry Finishes and Accessories" (9H1).

See Industrial Section for **Plumbing Fixtures and Fittings**, as follows: (1) Crane Co., p. xxviii; (2) Kohler Co., p. iv; (3) Trenton Potteries Co., p. xxxvi; (4) Loomis-Manning Filter Distributing Co., p. xxxvi.

(*f*) For **Valves and Fittings**, see "Pipes, Valves, and Fittings" (10J).

(*g*) **Post-Caps, Hangers, Stirrups** and similar structural devices are important metal products, references to which will be found in many of the publications listed in the Wood issue, Serial No. 5, May, and are specifically referred to also under 5G4.

1. These, together with anchors, bolts, angles, clamps, and other fasteners and supports for terra-cotta work, cornices, etc., and for interior false work, will be found described and illustrated in many of the references given in March and April issues especially, 4D4.
2. For **Wall-Hangers, Post-Cap and Girder Supports**, see "List of Inspected Mechanical Appliances," Underwriters' Laboratories (3A6*b*).
3. For same, see, also, **"Approved Fire Protection Appliances,"** A.F.M.F.I. Co's (3A7*a*3).

(*h*) **"Anchors** for Lateral Stability for the Architectural Detailer and Stone Setter," Ernest G. Schurig, *Journal of the Society of Constructors of Federal Buildings*, May, 1916. Illus.

(*j*) **"Wall-Fastening Devices,"** C. McFarland, followed by discussions, *Journal of the Society of Constructors of Federal Buildings*, March, 1916.

(*k*) **"Safety Devices for Elevators,"** Jacob Gentz, Jr., *Power*, Jan. 9, 1917. Illus.

(*l*) See **"The Arrangement and Requirements of Elevators in Office Buildings,"** Cecil F. Baker (from the *Architectural Record*), *"Engineering-Contracting,"* May 17, 1916.

(*m*) **For Electric Elevators**, see Industrial Section: (1) Otis Elevator Co., p. xxxi; (2) A. B. See Electric Elevator Co., p. xxxvii.

(*n*) For **Hand Power Elevators** and **Dumb Waiters**, see Industrial Section, p. xxxviii, Sedgwick Machine Works.

(*o*) For **Fireplace Throats and Dampers**, see Industrial Section, p. xxiv, Colonial Fireplace Co.

11B11 *Hardware*

(*a*) "The American Hardware Manufacturer" is the official organ of the American Hardware Manufacturers' Association (11A13).

This Association, which recently accepted membership on the National Industrial Conference Board, has, through its officers and Executive Committee, inaugurated a significant movement in which architects and the prospective owners of buildings throughout the country may greatly aid.

Started in May of this year, specifically for the purpose of conserving men and money in time of war, but destined, with that approbation which will surely be forthcoming, to make for permanency and lead to standardization of purpose and procedure, the members have concurred in a **Resolution to reduce the number of styles of hardware, to curtail the different kinds of finishes**, and **to eliminate all slow-selling items.**

This action has been commended by the Commercial Economy Board of the Council of National Defense which has said, "in practically every trade there have grown up non-essential services, some of them mere conveniences, and others hardly that; in time of peace they may be permissible; in time of war they are a serious waste and should be stopped . . . concerns should curtail excess variety of styles."

Architects, in specifying and selecting hardware, are urged to take an important part in this desirable economic reform. The saving in the publication and examination of manufacturers' catalogues alone would be very considerable in money and in time, to say nothing of the vastly greater reduction in cost of manufacture and handling, in the wake of which other improvements would result.

The Structural Service Department may be counted upon to do its part in this direction and in others, such as establishing definitions of **"right and left-hand" doors**, and steps are already being taken.

(*b*) The National Retail Hardware Association (11A14) is devoting attention to research, the analytical study of modern hardware problems, and the devising and recommendation of methods and standards for the application of greater economies to hardware distribution and more efficient merchandising. The official organ of the Association is the *National Hardware Bulletin*, published monthly.

(*c*) **"Details to Which Standard Hardware Can Be Applied"** is a series of 27 plates, 8½ x 11, bound in cloth, drawn by F. M. Snyder, Architect, for twelve hardware manufacturers, by whom it has been distributed. It bears on the title page "As Chairman of the Committee on Materials and Methods of the A.I.A. I am glad to have this opportunity of expressing approval of this much-desired publication.—THOMAS NOLAN."

(*d*) The Navy Department issues specifications for various kinds of hardware, including:

Double-Acting Spring Butt Hinges (42H20*a*), illus.; **Liquid Door Checks** (42C8*a*); **Sash Cord** (42C9*a*); and others, for index to which see 3A1*a*1.

(*e*) See **"Finishing Hardware,"** Fred G. Hammer, followed by discussion, *Journal of the Society of Constructors of Federal Buildings*, March, 1916.

(*f*) **"Troubles with Hardware,"** Charles E. Morrell, Jr., *Journal of the Society of Constructors of Federal Buildings*, September, 1915

(*g*) See, **Locks and Builders' Hardware**, Henry M. Towne. 1117 pp.

(*h*) For **Hardware for Fire-Doors and Shutters, Automatic Closers, Door-Checks, Panic-Bar Latch Release, Hardware for Fire Window-Frames, Fusible Links, Transom and Transom Operators**, and other devices, see "List of Inspected Mechanical Appliances," Underwriters' Laboratories.

(*j*) For same, see, also, **"Approved Fire-protection Appliances"** of the A.F.M.F.I. Co's (3A7*a*3).

(*k*) For reference to **Self-releasing Fire-exit Latches**, see 5G4*g*. and, also, Industrial Section, p. xi, Vonnegut Hardware Co.

(*l*) For reference to **Pulleys** and standardization data, see 5G4*d*. Also, see Industrial Section, p. xxii, The Columbian Hardware Co.

(*m*) **"Method of Fastening Sash Tape,"** Harry G. Richey, *Journal of Society of Constructors of Federal Buildings*, September, 1915.

(*n*) The Bureau is frequently called upon to test the wearing quality of window-sash cord. To carry out this work, there has been in use for several years a special testing machine which was designed by the Bureau to duplicate as far as possible the actual conditions of service. The results obtained in testing a variety of sash-cord prove that the wearing quality of the cord is, within wide limits, quite independent of its tensile strength, but is dependent in a remarkable fashion upon oils, greases, and other substances which are naturally present or are added by design.—(From Report of the Bureau of Standards, 1916.)

11B12 *"Ornamental" Metal Work*

(*a*) The Standardization Committee of the Architectural Iron and Bronze Manufacturers (11A8), Mr. Hugh White, Chairman, has for several months been working on **standard specifications**, but on account of abnormal conditions the project has been indefinitely postponed.

(*b*) The National Association of Ornamental Iron and Bronze Manufacturers (11A9) is working with the Government to **standardize metal gauges** of all kinds.

(*c*) The **Standardization** Committee of the National Association of Brass Manufacturers (11A11) will report, in December.

(*d*) **"Architectural Bronze,"** Clarence A. Fullerton, followed by discussion, *Journal of the Society of Constructors of Federal Buildings*, March, 1916. Illus.

(*e*) **"Architectural Wrought Iron, Ancient and Modern,"** W. W. Kent. A compilation from various sources of German, Swiss, Italian, French, English, and American ironwork, from medieval times to the present day. Illus.

(*f*) "A Handbook of **Art Smithing,"** F. S. Meyer. For the use of practical smiths, designers of ironwork, technical and art schools, and architects. Illus.

(*g*) **"Plain and Ornamental Forging,"** Ernst Schwarzkopf. 1916.

(*h*) "Making **Thin Wall Ornamental Brass Castings,"** R. S. B. Wallace, *Mechanical Engineer*, Jan. 12, 1917. Paper read before American Institute of Metals.

(*j*) Members of the art commissions of the cities of New York, Philadelphia, and Detroit, as well as certain art-bronze manufacturers, have urged the Bureau to take up the question of the standardization of art bronzes for outdoor statuary. This should include a determination of the most suitable chemical composition, the production of a desirable and agreeable patina, and methods of care and cleaning such statues. In the different cities of the country, statues oftentimes take on an unsightly appearance, largely caused by the contaminated atmosphere. It is believed a systematic study will go far toward improving this condition.—(From Report, Bureau of Standards, 1916.)

(*k*) See Industrial Section, p. xviii, for illustration of **Bronze Sarcophagus**, The Gorham Co., Architectural Bronze.

11B13 *Lighting Fixtures*

(*a*) **Specifications** for same will be found in "Mechanical Equipment of Federal Buildings" (6L1*g*).

(*b*) For **electric lighting fixtures**, see "Illumination, Lighting Fixtures and Lamps" (6H).

(*c*) For **gas lighting fixtures**, see "Illumination—Fixtures, Equipment and Ignition" (7M).

(*d*) See, also, Report of Committee of the American Gas Institute on Piping Large Buildings for Gas (7A2*k*), which contains an extended section on **"Fixture Illustrations"** pp. 39–53.

11B14 *Stairways, Fire-Escapes, Slipping Hazards*

(*a*) For information on **"Exits—Stairways and Fire-Escapes, Safety to Life, Slipping Hazards,"** see Sections 4E to 4E3.

(*b*) For **Fire-Escapes and Safety Treads**, see "List of Inspected Mechanical Appliances," Underwriters' Laboratories (3A6*b*), and "List of Appliances Inspected for Accident Hazard."

(*c*) **"Selecting Abrasives for Specific Uses,"** R. G. Williams, *Industrial Management*, January, 1917. Illus.

(*d*) "Some **Hazards and Safety** Suggestions," H. W. Mowery. Illustrated address presented under the auspices of The American Museum of Safety, December, 1915.

(*e*) **"Slipping and Tripping,"** H. W. Mowery. Presented to the Philadelphia Local National Safety Council, at Franklin Institute, March, 1916.

[NOTE.—Though this issue treats of Metal Products in General, the subject of **Store Front Construction** will be covered in Serial No. 12, on account of its relation to Plate Glass.]

11C Plastic Materials and Products

See, also, Metal and Plastic Products (11D1*g*) for handbooks and other publications which treat of both together, and see various subdivisions of that heading wherein plastic products are mentioned in connection with metal products.

11C1 *Cement, Lime, and Gypsum, in General*

(*a*) See Proceedings, A.S.T.M. (1A4*a*), for the following reports of committees.
Cement (A.S.T.M.: C-1); **Lime** (A.S.T.M.: C-7); **Concrete** and Concrete Aggregates (A.S.T.M.: C-9); **Gypsum** and Gypsum Products (A.S.T.M.: C-11).

(*b*) **"Cements, Limes, and Plasters:** Their Materials, Manufacture, and Properties," Edwin C. Eckel, Assistant Geologist U. S. Geological Survey. 712 pp., illus.

(*c*) **"Concretes, Cements, Mortars, Plasters, and Stuccos,"** F. T. Hodgson, Architect. 500 pp., illus.

(*d*) For detailed information and references **Lime and Hydrated Lime** for various purposes (chiefly mortars), see 2B to 2B10, and, also, Industrial Section, p. xvii, Hydrated Lime Bureau.

(*e*) The plasticity and sand-carrying capacity of lime are properties of great importance commercially, yet their measurement has always been an extremely difficult matter. A method for making this measurement has finally been developed, and an instrument has been built for the purpose. A lime paste or mortar is molded into form and immediately subjected to compression. The load required to produce rupture and the amount of deformation before rupture are found to depend upon the plasticity of the material.—(Report, Bureau of Standards, 1916.)

(*f*) For **Gypsum used in Building Construction**, see references listed under 4B1*bb*.

(*g*) See reference to Annual Statement of U. S. Geological Survey pertaining to **Gypsum**, listed under 4K3.

(*h*) In the matter of evolving **standard specifications for Gypsum** and methods for testing the material, see 4K5.

(*j*) **"Gypsum Deposits in the U. S.,"** G. I. Adams and others. Bulletin No. 223 of the U. S. Geological Survey. 1904. 129 pp.

(*k*) See, 1E1 to 1E8 for references to **Cement and Concrete** of structural significance, the following being given chiefly in connection with the consideration of surfacing these materials. The finishing of cement and other surfaces, as in "stucco," will be more fully treated under Lathing and Plastering, 11D6.

(*l*) "The Decorative Possibilities of Concrete," C. W. Boynton and J. H. Libberton, *Journal of the Association of Engineering Societies*, 1913, p. 719.

(*m*) **"Concrete Construction for Rural Communities"** Roy A. Seaton. 225 pp.; illus.

(*n*) See sections in "Inspector's Handbook of **Reinforced Concrete,"** W. F. Ballinger and E. G. Perot, Architects. 64 pp.

(*o*) **"The Cement Gun,"** *Engineering* (London), June 9, 1916. Illus.

(*p*) **"The Cement Gun and Its Work,"** Carl Weber, *Journal of the Association of Engineering Societies*, 1914, p. 272.

(*q*) **"Coating Steel at Grand Central Terminal with Cement Gun,"** W. F. Jordan, *Engineering News Record*, May 25, 1916.

(*r*) **"Sand Lime-Brick** in 1915," Jefferson Middleton. Reprint from "Mineral Resources of the U. S.," Part II, U. S. Geological Survey, 1916.

(*s*) "Manufacture and Properties of **Sand-Lime Brick**," Warren E. Emley, March, 1917. Technologic Paper No. 85, Bureau of Standards. 10 cents.

(*t*) "Properties of some **European Plastic Fire Clays**," A. V. Bleininger and H. G. Schurecht. 1916. Technologic Paper No. 79, U. S. Bureau of Standards. 34 pp., illus. 10 cents.

(*u*) **Concerning Cement**, see, also, Industrial Section: (1) The Atlas Portland Cement Co., p. xiii; (2) Lehigh Portland Cement Co., p. v.

(*v*) For **Mortar Colors**, see Industrial Section, p. xvii, Samuel H. French & Co.

11C2 *Bituminous Materials—Waterproofing and Dampproofing*

For other information on **"Waterproofing and Dampproofing,"** see 1D to 1D6, inclusive.

(*a*) See Reports of Committee D-8, A.S.T.M., on **Waterproofing.**
It is of interest to note that the A.S.T.M. at its Convention in June recommended that hereafter the word "dampproofing" shall be added to the word "waterproofing" and combined as "waterproofing and dampproofing" in committee reports.
In accordance with the programme outlined last year, the Committee submitted—four "proposed tentative specifications" (see Titles in A.S.T.M. Book) for Asphalt, for Primer, for Coal-Tar Pitch, and for Creosote Oil, all when used for waterproofing and dampproofing under uniformly moderate temperatures.
Because of present conditions, arising from the state of war in which our country is involved, no conclusive work in the matter of conveying media—saturated felts and woven fabrics—has been accomplished, and before specifications covering these materials can be drawn up, the questionable part which they actually play in a finished waterproofing membrane must be definitely settled. The present unnatural state of the rag market is another controlling economic feature which at present militates against the preparation of specifications covering media.

(*b*) See, also, **"Heat Transmission, Insulation, Coverings"** (10N), which contains many publications of interest.

(*c*) **"The Asphalt Industry"** (from an interview with James L. Rake), "Proceedings," Engineers' Club of Philadelphia, January, 1917. Illus.

(*d*) **"Asphalts:** Their Sources and Utilization," T. Hugh Boorman. Contains addenda treating on general waterproof construction.

(*e*) **"Effects of Exposure on Tar Products,"** C. S. Reeve and B. A. Anderton, *Journal*, Franklin Institute, October. Illus.

(*f*) **"Waterproofing,"** Thomas Appleton, *Journal of Society of Constructors of Federal Buildings*, May, 1915.

(*g*) See the following in the *Journal of the Society of Constructors of Federal Buildings*, issue of February, 1917:
1. **"Waterproofing,"** a paper by A. Grothwell.
2. **"Integral Waterproofing,"** a paper by Mr. Horn.
3. **"Technical Paints,"** a paper by A. H. Rhett.

(*h*) **"Prevention of Dampness in Buildings,"** A. W. Keim. Translated from the second revised German edition. 115 pp.

(*j*) **"Modern Methods of Waterproofing,"** Myron H. Lewis. Covers principles, methods and precautions. 44 pp., illus.

(*k*) **"Waterproofing of Engineering Structures,"** W. H. Finley, *Journal of the Association of Engineering Societies*, 1912, p. 545.

(*l*) See **"Smoke and Water Damage,"** F. E. Roberts, N.F.P.A. *Quarterly*, Vol. 7, No. 4 (4D1*l*).

11C3 *Cast Stone*

(*a*) In addition to its inclusion within some of the publications referred to elsewhere, this subject will be found most fully treated in the literature of the manufacturers.

(*b*) See **"Concrete Stone Manufacture,"** Harvey Whipple. 1915. 77 pp., illus.

11C4 *Floor, Wall and Ceiling Tile*

(*a*) The purpose of the Associated Tile Manufacturers (11A17) and its offers of practical service to architects have been explained in the Industrial Section during different months. Among the publications of the Association are:
1. **"Specifications for Setting Tile."** The Association is working on the revision of these specifications.
2. **"Tile Floors and Walls for Hospitals."**
3. **"Swimming-Pools."** (See 9J29.)
4. **"Plates,"** showing different classes of work in buildings, which are mailed to architects at frequent intervals.
5. See Industrial Section, p. xxxiv, The Associated Tile Manufacturers.

(*b*) For "A Bibliography of Clays and the Ceramic Arts" and other publications of the American Ceramic Society, Inc., see 3C1.

(*c*) The U. S. Navy Department issues specifications (3A1*a*2) for **"Tiles"** serial designation 59T2, August 1, 1916.

(*d*) "The **Craft of Tile-Making** and Its Relation to Architecture," J. H. Dulles Allen, in the *Journal* of the A.I.A., January, 1915.

(*e*) **"Pottery,"** A. Beckwith. Observations on materials and manufacture of terra cotta, stoneware, firebrick, porcelain, earthenware, brick, majolica, and encaustic tiles. 101 pp.

(*f*) "A Treatise on **Ceramic Industries,"** Emile Bourry. A manual for pottery, tile, and brick manufactures. 488 pp., illus.

(*g*) See, also, **"Building Stones and Clay Products,"** Heinrich Ries. A handbook for architects. 415 pp., illus.

(*h*) **"Tests of Adhesion of Face Tile to Concrete Backing,"** *Engineering News Record*, June 22, 1916. Illus.

(*j*) For **China Bathroom Accessories**, see 9H1, and Industrial Section, p. xxxii, The Fairfacts Company, Inc.

11C5 *Roofing Tile*

(*a*) See some of the publications listed under Terra-Cotta, Hollow Tile and Brick (3D1); also literature of University of Illinois (3C2); also some of those in preceding Tile Section.

(*b*) See, also, Roof Coverings (11D2).

(*c*) In its report at recent annual meeting, the Committee on Allied Arts of the Philadelphia Chapter of the A.I.A. made the recommendation that the Institute's Committees on Allied Arts and Materials and Methods exert an influence with the large factories to turn out a more interesting product.

11D Metal and Plastic Products

See Metals and Metal Products (11B); also Plastic Materials and Products (11C) for references to each of these separately. The intention is under this combined heading to refer to those publications which treat of both products equally in detail and to those branches of construction where both metal and plastic products are under consideration at the same time.

Attention is directed to the offers made placing the facilities of their departments for investigation, research, and coöperative work at the disposal of architects and other citizens by the Bureau of Standards (1A2) and the Geological Survey (2A1).

The Government has published a very interesting report upon "Substitution of Other Materials for Wood," which forms a part of the investigation of the Federal Trade Commission and of the Forest Service into conditions within the lumber industry, and is now for the first time made available to the general public.

The report is illustrated with charts, showing the relative trend in prices of lumber, brick, cements, structural iron and general prices for twenty-five years, ending 1915; also other charts showing (in part) the consumption of building brick, of iron and steel structural shapes, natural and Portland cement, of clay building materials, and of cut and wire nails. There is also a graphic study of building permits in twenty of the larger cities of the country. The increasing use of metal trim and metal furniture is graphically shown by another diagram. Copies of the report may be obtained for 15 cents from the Superintendent of Documents, Washington, D. C.—(From November News Letter, 1917, N.F.P.A.)

11D1 *Materials in General*

(*a*) See **"Mineral Resources of the U. S."** Part I, "Metals;" Part II, "Non-Metals," separate Chapters of which are devoted to various metals and plastic products (2A1*b* and *c*), U. S. Geological Survey.

(*b*) **"The Testing of Materials,"** Circular No. 45 of the Bureau of Standards. 1913. 10 cents. Treats of the tests of Metals and Metal Products, Composite Metal Products, Cements (hydraulic) and Concrete, Burnt Lime, Hydrated Lime, and Sand-Lime-Brick.

(*c*) For account of the fire-tests on columns and coverings—which include various metal and plastic products—being conducted at the Underwriters' Laboratories in Chicago, and at the Bureau of Standards in Pittsburgh and at Washington, see 3E3.

(*d*) See, also, "Reports on Buildings under Fire "(3E1), and "Reports on Fire Tests of Materials" (3E2).

(*e*) The Navy Department issues specifications for many metal and plastic products, such as:

Expanded Metal—47M1; Safes—54S1*a*; **Metal Furniture for Use of Vessels of the U. S. Navy**—26F1*b*; **Cotton Canvas**—24C8*b*; **Asbestos Plaster-Plastic Lagging Material**—32P2*a*; **Tarred Sheathing Felt**—33F1*a*; **Trinidad Asphalt**—59A1; **Asbestos Plaster Cement**—32P1; and others, for index to which see 3A1*a*1.

(*f*) A large number of manufactured products of various kinds referred to herein may be seen at Architects' Samples Corporation display rooms, Architects Bldg., 101 Park Avenue, N. Y. City.

(*g*) See the Sections, articles, descriptions, and illustrations pertaining to practically all metal and plastic products, including those covered by various headings and subdivisions in this issue, in:

1. Kidder's Architects' and Builders' Pocket Book. 1916.
2. Trautwine's Civil Engineers' Pocket Book. 1913.
3. American Civil Engineers' Pocket Book, Merriman. 1916.
4. Building Construction and Superintendence: Part I, Masons' Work, Kidder. 1914. Revised and enlarged by Thomas Nolan.
5. The Building Estimator's Reference Book, Frank R. Walker. 1917.
6. The New Building Estimator, William Arthur.
7. Handbook of Cost Data, Halbert P. Gillete.
8. Building Code Recommended by the N.B.F.U., 1915.
9. Dwelling Houses—A Code of Suggestions for the Construction and Fire-Protection (3A4*d*2).
10. Field Practice—Inspection Manual of the N.F.P.A.(3A3*d*1).
11. The Metal Lath Handbook (3C11*a*).
12. "Fire Prevention and Fire Protection," J. K. Freitag.
13. "Fireproofing of Steel Buildings," J. K. Freitag. 1909.
14. Crosby-Fiske Handbook of Fire Prevention. 1914.
15. "A Handbook for Superintendents of Construction, Architects, Builders, and Building Inspectors," H. G. Richey. 742 pp., illus.
16. "Building Foreman's Pocket Book and Ready Reference," H. G. Richey. 1118 pp., illus.
17. "Materials of Construction," Adelbert P. Mills. Treats of manufacture, properties, and use. 682 pp., illus.
18. "Inspection of Materials and Workmanship Employed in Construction," Austin T. Bryne. A reference book for the use of inspectors, superintendents, and others engaged in the construction of public and private works.
19. "Materials of Construction," C. B. Johnson. A treatise on the strength of engineering materials. 795 pp., illus.
20. "Cyclopedia of Architecture, Carpentry, Building," American School of Correspondence. 10 volumes.
21. International Library of Technology, International Textbook Company.
22. I.C.S. Building Trades Pocket Book.
23. Universal Safety Standards, Carl M. Hanson. 1914.
24. "Handbook for Architects and Builders." Illinois Society of Architects, Vol. XX. 1917.

(*h*) See, also, Industrial Section, p. xxi, concerning **Engineering Service** Department, Corrugated Bar Co.

11D2 *Roof Coverings—also Sheet Metal Work, Cornices, Skylights, and Ventilators*

Before arranging for the placing of light-shafts, roof-openings, ventilators, cornices, etc., a study should be made of the latest report of the Committee on **Roof Openings and Cornices** in Proceedings N.F.P.A., with discussion which followed—pp. 317-333 in 1917—and of the Section on **Skylights** in the N.B.F.U. Building Code, 1915 (3A4*d*1). The **"Regulations"** of the N.B.F.U. as recommended by the N.F.P.A. on **Skylights** (3A3*a*20) should also be obtained and followed.

(*a*) A most interesting symposium on the subject is the Section **"Roofings"** in the Manual of the American Railway Association (1A9*c*), in which are taken up considerations in selecting roofings, classification of important materials, under which is discussed the **properties and relative advantages** and economies of each. **Felts** are described and discussed, also **built-up roofs, tile, brick, slate, asbestos shingles, cement tile, metallic roofings** and **ready roofings**, with conclusions and recommendations given with respect to **flashings, flat roofs, allowable slopes** and other features.

(*b*) Wood Shingles, see **"Shingles, Lathing and Wall Boards"** (5K).

(*c*) For **Slate Roofing**, see 2K1 to 2K8, inclusive.

(*d*) For Tile Roofing, see 11C5.

(*e*) For various kinds of roofing, see references under "Horizontal and Sloping Features" (4D).

(*f*) Skylights and Ventilators, see, also, **"Natural Ventilation"** (10G).

(*g*) For sheet metal work, see, especially, **"Metal Work, Ducts, Chase Lathing"** (10L), and "Metal Products in General" 11B5.

(*h*) The National Association of Sheet Metal Contractors of the U. S. (11A10) issues the following:

1. "Warm Air Heating and **Sheet Metal** Journal" (See 10D7.)
2. **"Tin Roofer's Handbook,"** 1907. Contains "A Brief History of Tin Roofing;" "Advantages of a Good Tin Roof;" "Working Specifications;" "Standard Specifications;" "Practical Hints" and weight per square of different kinds of roofing. 23 pp., diagramatically illustrated, showing the development and completion of the seams in flat and standing-seam roofing. Free upon request.
3. Circular entitled **"Tin Roofing Facts for Architects' Use"** states the application, cost, maintenance, advantages, and quality of tin roofing.
4. **"Standard Specifications for Tin Roofing Work,"** 1909. These specifications were compiled for the original Association then known (organized 1905) as the National Association of Master Sheet Metal Workers by a joint committee of tin roofers, representing all sections of the country, and manufacturers of tin roofing plate. They were adopted by the Association as standard in August, 1909, and have remained unchanged since. They have been widely referred to and are printed and distributed by certain manufacturers of tin roofing and recommended for use. They are comparatively brief and so worded that they may be incorporated into architects' specifications.

   Application suggested by the Editor of the S.S.D.:

   "Wherever tin roofing is shown, marked, indicated or specified it shall be of (name the brand only, not the thickness which, for differing portions of the roof, is covered by the specification) laid and painted in accordance with the Standard Specification for Tin Roofing Work of the National Association of Sheet Metal Contractors of the U. S., edition of August, 1909, with any subsequent official amendments thereto. (This proviso is added merely to make the application up to date, no matter when used.)

   This specification is referred to with especial interest as indicating **how** a product shall be used, the literature of many manufacturers concerning itself chiefly with the **why**.

(*j*) The following notes explain the terms indicating the weight rather than the thickness governing the manufacture and use of **roofing tin:**

The terms **"IC"** and **"IX"** are universal in the **Tin Plate** Industry throughout the world, as denoting the gauges of the

plates that are most generally used. Originally the "IC" was simply "C" and denoted the word "common," that is, the common thickness of plates, which was 1 pound for each sheet of 14 x 20 inches, or 2 pounds for each sheet of 20 x 28 inches. These plates were always packed 112 sheets to a box, thus giving the English hundredweight for the 14 x 20, which was the usual size, or two hundredweights for the 20 x 28 inches.

A thicker plate is, of course, better, and the next heaviest thickness to the "C" was marked with a "X" (as on bags of flour, XX and XXX to indicate quality) but in the Tin Plate business these marks indicated thicknesses.

The British used the hundredweight of 112 pounds, and their IX plate for the 112 sheets of 14 x 20 inches was a quarter of a hundredweight heavier than the "C" plate, or, in other words, was 140 pounds. They had plates which weighed 168 pounds, and these they marked "XX" and on up, which thicknesses, however, are used only for tinware, dairy utensils, etc.

It became quite usual to put a one before the cross in order to indicate that it was IX only, and as time elapsed, the original meaning of the signs became obscured, and people in the trade began to write this figure one (1), or, as it is sometimes called, a letter "I," before all the gauges, hence the expression "IC."

(*k*) The unusual demands for **Tin Plate** in this war year have led mills to tin a much greater proportion of their **black plate** production than is ordinarily the case. This practice, says a statement issued by the Bureau of Foreign and Domestic Commerce, will also be followed next year, judging from figures just made public by the **Tin Plate Conservation** Committee and which are based on returns from the large producers.

(*l*) See "**TheManufacture of Terne Plates,**" W. Sebald, *Journal of Society of Constructors of Federal Buildings*, March, 1916.

(*m*) "**Metallic Roofing,**" D. M. Buck. 48 pp. Paper and discussion in "Proceedings" of Engineers' Society of Western Pennsylvania for December, 1911.

(*n*) "**Laying Copper Roofing and Gutters,**" William Neubecker. Fifth of a series of six articles showing methods employed in providing for expansion and contraction of the metal—laying copper roofing on **wood battens.** Illus. In *Sheet Metal* for September, 1917.

(*o*) "**Copper Roofs,**" John W. Ginder, *Journal of the Society of Constructors of Federal Buildings*, November, 1914.

(*p*) "**Sheet Metal Work,**" William Neubecker. A practical guide to sheet metal work, **cornice work, skylight work, metal roofing,** pattern drafting, etc. 267 pp., illus.

(*q*) "**Practical Metal Plate Work,**" P. N. Hasluck. Illus.

(*r*) See "**Practical Sheet Metal Work and Demonstrated Patterns.**" 8½ x 11 inches. Bound. Illus. Some of the volumes are:
1. **Leaders and Leader Heads.** 113 pp.
2. **Gutters and Roof Outlets.** 116 pp.
3. **Roofing.** 138 pp.
4. **Ridging and Corrugated Iron Work.** 132 pp.
5. **Cornice Patterns.** 119 pp.
6. **Circular Cornice Work.** 126 pp.
7. **Practical Cornice Work.** 139 pp.
8. **Skylights.** 122 pp.

(*s*) See "Smith's **Tables for Skylights and Roofs.**" 84 pp., illus.

(*t*) For **Roof Coverings, other than metal,** see "List of Inspected Mechanical Appliances," Underwriters' Laboratories (3A6*b*). The same are classified under Underwriters' Standards for Roof Coverings according to their fire-retardent qualities, as follows: **Class A, Class B, Class C.** The following is quoted: "Roof coverings should be suitable for, and in keeping with, the types and classes of buildings upon which they are installed. Roof coverings of any of the above classes can be employed in situations where the fire exposure is less severe, than if used in situations where the fire exposure is more severe than that for which they are classified; the increased fire hazard should be recognized. **Inspection Departments having jurisdiction should be consulted** regarding which class roof covering will be acceptable in the locations proposed."

(*u*) For "**Classification of Roofs and Roofings,**" see five references in N.F.P.A. "Index" (3A3*h*5).

(*v*) See "**Roof Covering Tests,**" N.F.P.A. *Quarterly*, Vol. 4, No. 1, and Vol. 10, No. 4.

(*w*) See "**Asbestos Roofing,**" N.F.P.A. *Quarterly*, Vol. 6, No. 2.

(*x*) For "**Standard Specifications for Asbestos Shingles,**" see 4D3*e*3.

(*y*) See "**Asbestos Roofing Shingles, Asbestos Protected Metal** and Other Products" (4D1*f*5), F. E. Kidder.

(*z*) The publication 3A4*c*3 contains an "**Ordinance for Fire-Resistive Roof Coverings.**"

(*aa*) "**Taking care of Water from Roofs.**" *Metal Worker*, Jan. 5, 1917.

(*bb*) "Discussion of **Conductor Heads** for Roof Drainage," Alfred M. Wolf, *Engineering News Record*, May 11, 1916. Illus.

(*cc*) **For data on proportioning gutters and conductors to the roof surface,** see Kidder, 1916, p. 1578.

(*dd*) In reference to "Barrett **Specifications" for roofs,** and guarantee bond, see 4D2–1. Also, see Industrial Section, p. vii.

(*ee*) For information on other materials and products of interest in connection with this Section, see pages in the Industrial Section as follows:
1. For illustrated information on **ventilating sash, skylights,** etc., p. xx, David Lupton Sons Co.
2. For detailed data on Swartwout **Ventilators,** p. xiii, The Ohio Blower Co.
3. For various **Asbestos Roofings,** p. xxv, H. W. Johns-Manville Co.
4. For Keystone **Copper Steel,** p. xix, American Sheet and Tin Plate Company.
5. For Target-and-Arrow **Roofing Tin,** p. xxiv, N. & G. Taylor Co.

11D3 *Floor Systems, Partitions, Furring, etc.*

(*a*) The principal literature, and the latest, pertaining to these products is issued by the manufacturers. Descriptions and illustrations of various types of construction with these materials will be found specifically in the following, and in some of the Handbooks and others mentioned elsewhere in this issue and in April issue under 4B, 4C, and 4D.
1. "Architects' and Builders' Pocket Book," F. E. Kidder.
2. "Building Construction and Superintendence;" Part 1, "Masons' Work," F. E. Kidder.
3. "Fire Prevention and Fire Protection," J. K. Freitag.
4. "Fireproofing of Steel Buildings," J. K. Freitag.

(*b*) "**Standard Tests for Fireproof Floor Construction,**" A.S.T.M., Serial Designation C. 2-08.

(*c*) "**Standard Tests for Fireproof Partition Construction,**" A.S.T.M., Serial Designation C.3-09.

(*d*) "Report on Inspection of Installation of **Gypsum Slab Construction** for Roofs and Floors," "Public Works of the Navy" (4D1*h*1).

(*e*) "Report on **Loading Test** of a Composition Floor Made by the U. S. Bureau of Standards," "Public Works of the Navy" (4D1*h*2).

(*f*) For "**Composite Floors and Roofs,**" see 4D2*a*1a.

(*g*) Report listed under 3A3*d*31 contains information on "**Floor and Roof Construction" in a standard building.**

(*h*) For "**Floor Hangers, Roof Connections and Devices,**" see Section 4D4.

(*j*) For **Asbestos Building Lumber, Plaster Boards, Partitions,** and **Gypsum Blocks,** see "List of Inspected Mechanical Appliances," Underwriters' Laboratories (3A6*b*).

11D4 *Floor Treatments and Coverings, and Paving*

(For Tile, see 11C4.)

For "Wood Floors and Finishes and Parquetry Work," see 5J, and for individual units for grounds, see 5G4*j*.

For concrete floors, underfills and various top coats, and for the treatment of concrete floors and surfaces, see 1E9 and 1E10.

(*a*) Among others, the Portland Cement Association (1E2) has issued the following publications:
1. "**Suggested Specifications for Concrete Floors.**"
2. "**Specifications for Concrete Roads, Streets and Alleys,** with Recommended Practice."
3. "**Tennis Courts** of Concrete."
4. "Concrete Feeding **Floors,** Barnyard **Pavements** and Concrete **Walks.**"

(*b*) See, also, "Suggested Specifications for **Concrete Floors.**" *Engineering-Contracting*, Jan. 24, 1917. (From pamphlet issued by Portland Cement Association.)

(*c*) "**Concrete Floors in the Home,**" *Scientific American Supplement*, July 8, 1916.

(*d*) "Construction of **Concrete Porch Floors and Steps,**" *Cement and Engineering News*. Serial beginning October, 1916.

(*e*) "**Concrete Floors and Sidewalks,**" A. A. Houghton. The construction of square, hexagonal and other forms of mosaic floor and sidewalk blocks or tiling are illustrated and explained.

(*f*) See "**Concrete Surfaces,**" *Cement and Engineering News*, January, 1917. Illus.

(*g*) "**Standard Specifications** for **Concrete Hardeners**" and, "Standard Specifications for **Concrete Floors,**" of Building Data League are referred to under 4D3*c*.

(*h*) "**Concrete Hardener,**" a paper by Mr. P. W. Nelson, *Journal of the Society of Constructors of Federal Buildings*, February, 1917.

(*j*) "**Causes of Cracks** in Cement Concrete Pavements," A. T. Goldbeck, *Canadian Engineer*, Jan. 25, 1917. Paper read before American Association for Advancement of Science.

(*k*) For "**Terrazzo Floors,**" see 2F4*a*.

(*l*) [See, also, "A Recent Experience with **Terrazzo Work**," J. E. Langley, *Journal of Society of Constructors of Federal Buildings*, May, 1915.

(*m*) "Investigation of **Composition Flooring**," R. R. Shively, *Engineering-Contracting*, Sept. 27, 1916. Paper read before the American Chemical Society.

(*n*) For a complete exposition of the subject of **Composition Flooring**, see reprint with that title from "Proceedings" of the Engineers' Society of Western Pennsylvania (11A4). 50 cents. This consists of 60 pages, including an address by H. M. Hooker, containing illustrations and many tables relating to all phases, followed with discussions on the subject in general by architects, engineers, and others.

(*o*) "**Mastic Floors** for Industrial Buildings," *Engineering-Contracting*, Sept. 27, 1916. Illus.

(*p*) For Navy Department Specifications for "**Linoleum**" and other flooring materials, including tiles, see 4D3*d*.

(*q*) "**Asphalt** Construction for **Pavements and Highways**," Clifford Richardson. A pocket book for engineers, contractors, and inspectors. 155 pp., illus.

(*r*) "Latest Advance in the Technology of **Asphalt Paving**," D. T. Pierce, "Proceedings," Engineers' Club of Phila., Oct. 1916.

(*s*) "The Modern **Asphalt Pavement**," C. Richardson. 580 pp., illus.

(*t*) "**City Roads and Pavements**," W. P. Judson. 197 pp., illus.

(*u*) "Specifications for Street **Roadway Pavements**," S. Whinery.

(*v*) Among the **standard specifications** published by the American Society of Municipal Improvements (11A5), are those for: (1) **Cement Concrete Paving**; (2) **Sheet Asphalt Paving**; (3) **Asphaltic Concrete Paving**.

(*w*) "Light Traffic **Pavements for Boulevards, Residence Streets and Highways**," Linn White and A. C. Schrader, *Journal of the Association of Engineering Societies*, 1912, p. 385.

(*x*) "**Revised Specifications for Plain Concrete Floors**," Wm. M. Kinney, in Illinois Society of Architects' Handbook (11D1g24).

(*y*) For "**Scuppers, Inserts, and Devices**," see 4C4.

(*z*) For use of Lapidolith, in **treating Concrete Floors**, see Industrial Section, p. xxii, L. Sonneborn Sons, Inc.

11D5 *Terms Relating to Plastic Products, Chiefly Plastering*

(*a*) The following letter from a firm of architects in the Middle West has resulted in correspondence which will lead to further consideration of all structural **nomenclature** by the Institute's Committee on **Materials and Methods** in collaboration with committees in the A.S.T.M., the N.F.P.A., and other bodies.

"We find a lack of consistency in the use of several words among architects, contractors and manufacturers, and we feel that some committee of the American Institute of Architects **should define** what **certain words** would mean when used on the drawings and in the specifications by architects.

"We find a great deal of difficulty with one in particular, the word "**stucco.**" With some it is synonymous with rough-cast plastering; with others it means **moulded plastering** run in place; and then, again, others interpret it as **ornamental plaster**. In our office we refer to rough-finished plastering as "**rough cast**" although the cement manufacturers' literature refers to it as "stucco." We refer to plaster work run in place as "stucco." We refer to all ornamental plastering which is cast in moulds and fastened in position as "**staff work.**"

"Other architects, again, use entirely different terms, and we think that the Institute can do much to bring about a uniformity."

(*b*) The word **stucco** is an old one, originally used in connection with anything run in place, such as moulding, or modeling, or other fine work as distinguished from ordinary plaster surfaces.

(*c*) The American Society for Testing Materials in its "Proceedings," Vol. 16, Part 1 (1916), pp. 452 to 471, gives the **development of definitions, glossary of terms**, and a **description of all processes** connected with cement, lime, gypsum and all other kinds of mortars, plasters and plastic materials and products under the caption of "Tentative Definition of Terms Relating to the Gypsum Industry—Serial Designation C11-16T." This calls attention to the origin of words now commonly used and the inconsistency with which they are applied to various products and processes.

In this, **stucco** is described as "a material used in a plastic state to form a hard covering for the exterior walls or other exterior surfaces of any building or structure." The word "stucco" is used without regard to the composition of the material, defining only its use and location of its use, as contrasted with the words "plaster" and "mortar."

(*d*) The U. S. Bureau of Standards, in Technologic Paper No. 70, says: "The word '**stucco**' as used in this report may be defined as a material used in a plastic state to form a hard coating for the exterior walls or other exterior surfaces of any building or structure. 'Stucco,' as here used, is a mixture of one or more cementitious materials, with sand or other fillers and with or without other materials, such as hair, coloring matter, etc. The word 'stucco' is used without regard to the composition of the material, defining only its use and location of its use, as contrasted with the words 'plaster' and 'mortar'."

(*e*) The Associated Metal Lath Manufacturers have defined "**stucco**" as referring solely to a covering of an exterior wall without regard to the composition of the material.

(*f*) The Portland Cement Association, in Bulletin No. 22, on "Portland Cement Stucco," use the word "**stucco**" to mean a covering of an exterior wall only.

(*g*) The Institute's Committe on Materials and Methods is considering the subject of standardized nomenclature in connection with these materials. See "**Nomenclature**" in *Construction*, July, 1917, including letter from Thomas Nolan on that subject.

11D6 *Lathing and Plastering*

(See, also, "**Shingles, Lathing and Wall Boards**", 5K.)

For correspondence concerning **Lathing Nails**, see 5M3.

For "Mill Construction Buildings Protected by Metal Lath and Plaster," see 5G2*h*1.

(*a*) For units individually applied to walls and partitions as "**grounds**" before plastering, see reference under 5G4*j*.

(*b*) "**Temporary Grounds** for Plastering," paper by Ernest G. Schurig, illus. *Journal of the Society of Constructors of Federal Buildings*, May, 1916.

(*c*) In the March Journal, under 3E3*g*, brief announcement was made concerning Technologic Paper No. 70, just then received from the Bureau of Standards, entitled "**Durability of Stucco and Plastic Construction**," R. J. Wig, J. C. Pearson, and W. E. Emley. In this connection the following is quoted from Report, Bureau of Standards, 1916:

"**A series of tests**, primarily to determine the comparative durability of various types of plastered metal lath on exterior walls, was undertaken in 1911. The results of these tests, obtained from the exposure of small panels, indicated the necessity of carrying out an investigation on a much larger scale. Accordingly, a new and more comprehensive series of tests was planned, the program of which was put into the hands of a coöperating committee, consisting of representatives of the Government, engineering societies, the Associated Metal Lath Manufacturers, the Portland Cement Association, the Gypsum Industries Association, the National Lime Manufacturers' Association, The Hollow Tile Manufacturers Association, and a number of contracting plasterers. The recommendations of this committee were followed in the construction of a test structure (described under 3E3*g*), and the panels were plastered with a number of typical stuccos, the work being carried out under the supervision of the coöperating committee. No general recommendations are given in the first progress report, nor will such recommendations be attempted until additional test-panels have been erected and an extensive **field examination** made of stucco houses which have been standing five years or longer. The report, however, contains many illustrations and much suggestive information of value to architects, builders, and prospective home-owners. This report will be amended from year to year as results become available."

(*d*) To the original test structure there has been built, since the report was prepared, an addition, which affords twenty-two new panels. These have been constructed in accordance with specifications prepared on the basis of suggestions resulting from developments in the original test-panels. Quite recently three additional stucco buildings have been built for purposes of emergency testing, and are experimental, so far as the stucco construction is concerned.

(*e*) 1. A Committee to **Standardize Architects' Specifications** exists in the Illinois Society of Architects. This Committee called together plastering contractors, manufacturers, and dealers, individually and as representing various associations, and endeavored to secure coöperation in the forming of a joint committee. Emory Stanford Hall, Chairman, furnishes the following notes:

The proposition has been to get the plasterers and the plastering material dealers to agree on a standard specification for **material and workmanship**; then to have the plastering material men guarantee their material to comply absolutely with the standard specification, stamping their guarantee on the packages or furnishing a certificate with each shipment, with the hope, ultimately, that laws might be enacted which would make it fraud to sell building material under a false label, the same as is the case under the Pure Food and Drug Act with reference to food and drugs. With a known and **acknowledged formula**, it would be a comparatively simple matter to ascertain adulteration of material. With a material complying strictly with an acknowledged specification, it would be a comparatively simple matter to place responsibility for defective workmanship.

The plan further provides that if, on receipt of material at the job, the contractor is not satisfied that same is in accord with standard specifications, then he may notify the architect and material dealer and have samples taken for **analysis**, proceeding with the work only upon the material dealer's instructions. If the analysis proves that the material delivered was in strict accord with standard specifications, then the **responsibility** for results is clearly upon the contractor, whereas, if the material delivered, upon analysis, proves not to have been in strict accord with standard specifications, then the responsibility for results may be properly placed on the material man, and he should be compelled to pay all expense, including labor, of **replacing** any defective work.

The Committee has been recognized by the municipal authorities to the extent that it has been asked to **fix a standard** for common plaster on wood lath, which shall be used as the basis of tests for determining the comparative value of substitute materials.

2. In the "Handbook for Architects and Builders" of the Illinois Society of Architects (11D1g24) will be found "**Standard Rules of the Measurement of Plastering**" adopted by the Employing Plasterers' Association of Chicago. These include also a **Tentative Outline Specification for Lath and Plaster Work**; also Recommendations, Jurisdiction Claims and **Patching of Plastering after other Trades** as well as the city ordinance.

(*f*) The Employing Plasterers' Association and the Journeymen Plasterers' Association Local No. 96, of Washington, D. C., through a joint committee are drawing up a **specification for lathing and plastering** which is to be submitted to the Commissioners for incorporation in the Municipal Building Regulations of the District of Columbia.

(*g*) In some of the pocket books and other publications listed there will be found descriptions and diagrams pertaining to the use of metal lath. The subject of **supports for suspended ceilings, cornices, beam-effects and vaulting**, etc., is of particular importance and is, perhaps, most fully treated in the four books listed under 11D3*a*.

(*h*) None of these, however, goes into this subject as completely as does the Metal Lath Handbook, which is described, together with many activities of The Associated Metal Lath Manufacturers, under 3C11. In this handbook the subject of supports for metal lath has been covered by diagrams and descriptions showing the **practice recommended** with respect to **walls, partitions, column** and **beam coverings, ceilings** and other types of construction. In the case of the latter, and most important feature, several drawings serve to show **Standard Details for Suspended Ceilings** for all types, which are accompanied by notes and recommendations. A detail of cornice and cove furring is also shown.

Illustrations of various types of metal lath are also given, with tables of **gauges and weights** of each. In this connection attention is called to the fact that The Associated Metal Lath Manufacturers have **standardized the weights per gauge for metal lath** at the figures given on pages xiv and xv in the Industrial Section, where, also, may be found "**Standard Details for Fire Retardent Belt Enclosures** and **Elevator Shafts Using Metal Lath and Plaster,**" and other data. Attention is called to error on page iv of Industrial Section, September issue, where the omission of a decimal point after the first figure in the weight made it, for 24 gauge, appear 340 lbs. per sq. yd. instead of 3.40—likewise with the other weights given.

It is of especial interest to note the attention which these metal lath manufacturers have devoted to the subject of **plastering**, as an indication of the importance which should be attached by all manufacturers, not to their product alone, but to all factors connected with its proper utilization. There will be found in the Handbook:

"**Interior Plastering,**" "**Specifications for Interior Plastering,**" "**Gypsum Plaster on Metal Lath,**" "**Exterior Plastering,**" "**Standard Specifications for Exterior Plastering**" (with detail showing recommended construction for outside wall, **omitting sheathing**, and, instead, back plastering metal lath between studs), "**Overcoating**" and "**Fire-stops.**"

(*j*) The before-described methods of procedure which are being developed for the **supporting and applying of lathing for ceiling construction** are of particular interest in view of the many specifications, some of them governmental, which call for the lath on all suspended ceilings and for all cornices, beam work, vaulting, and false work to be "supported and secured in a rigid, thoroughly satisfactory, and workman-like manner to approval." In consideration of this all too frequent practice, it is no wonder that equable conditions do not always prevail, even in the estimating, and that controversies frequently arise as to the interpretation of "**stiff,**" "**rigid,**" "**satisfactory,**" "**to approval**" and the other terms which are used **instead of definite instructions or direct reference to a standard** to be followed.

(*k*) In the case of New York City, for instance, this does not apply, for in its **Building Code** are probably as **complete** and detailed **requirements** for **ceiling construction and other lathing** as will be found anywhere. Such definite provisions make not alone for that safety which is essential under ordinary conditions, but take into consideration the **additional factors** required under heat expansion in localized fires and plenum conditions in the case of a conflagration. (Referred to in many publications listed under 3E1 and 2.)

(*l*) The **absence of such provisions** in some other cities makes all the more significant and worthy of encouragement the action of, for instance, the "Local 53 for Philadelphia and Vicinity" of the Wood, Wire and Metal Lathers International Union. This local, which is an affiliate of that listed under 11A16, has recently issued and sent to all architects and contractors in the local district "**Uniform Lathing Specifications**" in which are incorporated some excellent provisions. The point is made that if, when such action is contemplated, it could be taken as a result of conferences with architects, plasterers, and builders, it would insure a more appreciative reception and a more general use than when, as in the case referred to, the specifications bear no address or date and do not contain the endorsement of any other organization or any individual known to the recipient.

(*m*) The Associated Metal Lath Manufacturers have plans and specifications at the Underwriters' Laboratories for making **tests of wire, expanded,** and **sheet metal lath** upon wooden studs, and joists in the form of fire-retardent partitions and ceilings, In this series of tests the same type of metal lath will be secured to metal studs and to metal members so as to constitute incombustible partitions and incombustible suspended ceilings.

Under date of Oct. 3, the Commissioner of the Associated Metal Lath Manufacturers has requested the coöperation of the Gypsum Industries Association, in that this Association will undertake to provide a **recommended gypsum plaster** to be used as the plastering material upon the already mentioned types of partitions and ceilings.

(*n*) The value of lime as a **wall plaster** depends, not only on its plasticity, but on its ability to retain water, so that it may be spread freely on the absorbent surface of the preceding coat. A method has been devised for measuring this so-called "**workingquality**" by spreading the mortar on a standard absorbing surface and adopting a standard means of determining when it has dried out so much that it can no longer be worked.—(Report, Bureau of Standards, 1916.)

(*o*) From "The Painting of Green Plaster," paper by John E. Langley, discussion by Ernest G. Schurig, *Journal of the Society of Constructors of Federal Buildings*, July, 1915, the following is quoted:

"One authority (the I.C.S.) in speaking of new walls states: 'It does not appear that any **painting** in oil can, with serviceable effects, be done on **stucco** (and this will apply to plaster also), unless the stucco is **dry**, in itself, and the walls have stood sufficiently long to have given the brickwork the requisite degree of dryness. Stucco, on furred walls, may be painted much sooner than otherwise.' All **masonry walls** should, therefore, be **furred for plastering**, if they are to be painted immediately upon completion of the building."

(*p*) For **list of the publications** of the I.C.S. just referred to, (International Correspondence Schools) and others **bearing upon this section**, see 11D1g, Materials in General.

(*q*) "Building Construction and Superintendence," Part 1: "Masons' Work," F. E. Kidder, contains Chaper XII on "**Lathing and Plastering,**" pp. 772–812.

See, also, Chapter XIII of the above for **specifications on "Lathing and Plastering—ordinary work lathing, plastering, hard wall plasterwork, wire lathing and metal, furring, stiffened wire lathing, metal lath on iron work.**" Also on "**Solid Partitions—metal lath and studding.**"

(*r*) The Committee on **Treatment of Concrete Surfaces** of the American Concrete Institute which has under consideration the development of **specifications for stucco** and for **surface treatments of concrete** will be actively engaged during the coming year in **inspection** of existing structures and in supplementary laboratory and **experimental work.** Chairman, J. C. Pearson, Bureau of Standards.

(*s*) See "**Plain and Decorative Plastering,**" William Millar. Has an introductory paragraph entitled "A Glimpse of Its History," G. T. Robinson. 1897.

(*t*) "**Facts about Stucco,**" reprinted from "*Pacific Builder*," in *Journal of the Society of Constructors of Federal Buildings*, November, 1914.

Reference to the above reprint is made in a brief section devoted to "**Stucco**" in Paper No. 189, *Journal of the Society of Constructors of Federal Buildings*, entitled: "Some Suggestions for Improvement of Drawings," H. G. Richey.

(*u*) "**Cement Workers and Plasterers' Edition** of the Building Mechanics' Ready Reference Series," H. G. Richey, Superintendent of Construction, U. S. Public Buildings. 458 pp., illus.

(*v*) **"Standard Specifications** for **Portland Cement Stucco** on Metal Lath, Brick, Tile or Concrete Block," American Concrete Institute. Referred to under 1E7*j*.

(*w*) **"The Reasons for Specifying Stucco"—what one architect learned from twenty years' special study**—the result of practical experimentation in building materials, William Hart Boughton. Printed in *House and Garden*, July, 1917. Illus.

(*x*) **"Artistic Stucco: Its History and Development and How It Should Be Done,"** John B. Orr. Presented at annual Convention of American Concrete Institute, February, 1917. Printed in *Concrete*, March, 1917.

(*y*) **"Solving the Crazing Problem:** A score of valuable discussions of the prevention and the removal of hair-checks," briefly abstracted and compiled by Harvey Whipple. Printed in *Concrete*, October, 1917.

(*z*) In addition to those elsewhere mentioned, see the publication of the Portland Cement Association, **"Portland Cement Stucco."**

(*aa*) See **"Modern Stucco Specifications"** of the Atlas Portland Cement Co., contained in an illustrated monograph on Early Stucco Houses of America. (Furnished upon request.)

(*bb*) See, also, **"Color Tones in Stucco,"** by the Atlas Portland Cement Co., which reproduces some of the panels in the recent experiments conducted by The Atlas Technical Department in toning stucco with exposed colored aggregates.

(*cc*) In addition to those previously mentioned, the Hydrated Lime Bureau publishes the following:

1. **"Standard Plaster for Hospital and School Construction,"** Bulletin G3.
2. **"Hydrated Lime Plaster for Scratch and Brown Coats,"** Pamphlet G.
3. **"Auditorium Acoustics,"** Bulletin G4.

[NOTE.—The subject of acoustics will be more fully treated in Serial No. 12.]

(*dd*) See **"Better Plastering and Better Acoustics,"** Lawrence Hitchcock. 1915. A treatise on interior plastering. 36 pp., illus.

(*ee*) Brief reference to **acoustics** is also made in the Metal Lath Handbook (11D6*h*).

(*ff*) **"Hydrated Lime** and Its Qualifications **as a Structural Material,"** Bela Nagy. "Proceedings," Engineers' Society of Western Pennsylvania for October, 1917.

(*gg*) **"Rigid Forms** for Reinforced Concrete to Obtain **Better Results in Plastering,"** Ernest G. Schurig, *Journal of Society of Constructors of Federal Buildings*, November, 1915. Illus.

(*hh*) **"Plastering,"** W. Kemp. A compendium of plain and ornamental plaster work.

(*jj*) **"Automatic Stucco and Plastering Machine,"** Ludwig Eisenkramer, *Journal*, Engineers Club of St. Louis, May, 1916. Illus.

(*kk*) **"Gypsum Plasters,"** address by Charles F. Henning before Society of Constructors of Federal Buildings. Also 4D1*j*.

(*ll*) For **Sand and Gravel**, see "Stone Masonry, Broken Stone, Sand and Gravel," 2C to 2C6, inclusive.

(*mm*) See, also, **"River Sand,"** E. G. Schurig, Paper No. 222, *Journal of the Society of Constructors of Federal Buildings*, November, 1916.

(*nn*) See Industrial Section for information regarding:

1. Elastica **Stucco**, p. xvi, American Materials Co., Inc., and U. S. Materials Co.
2. Bishopric **Stucco or Plaster Board**, p. iii, The Bishopric Manufacturing Co.

11D7 *Ornamental and Decorative Work*

See, also, some references in preceding Section.

(*a*) **"The Art of the Plasterer,"** George P. Bankart. An account of the decorative development of the craft (chiefly in England), and modern plaster work. 350 pp., illus.

(*b*) "Collection Thiebault," A. Thiebault, French sculptor and plastic decorator. A reprint of the best plates from the "Motifs de Decoration Interieure et Exterieure."

(*c*) **"Plaster Casts,"** Frank Forrest Frederick, Professor of Art and Design in the University of Illinois. A brief historical review of the art of casting. Directions for making casts by the waste, piece, elastic, and sulphur-mould process, and **notes upon clay modeling.**

(*d*) **"Plastic Ornaments,"** H. Friling. Contains designs for capitals, pillars, friezes, finials, corners, panels, cartouches, shields and many other ornamental details of facades.

(*e*) An interesting description of **Fresco** and a discussion of its possibilities is contained in "The New France," October, 1917, under "A Renaissance of Communal Art," Henry Caro-Delvaille.

(*f*) "The Timepiece of Shadows," H. S. Spackman. A history of the **sun-dial**, illustrating many noted sun-dials, with practical rules for construction.

COMPETITION ANNOUNCEMENT

The Board of Control of the state of California announces to all architects who are citizens of the United States.

That a Competition has been instituted for the selection of an architect to design and supervise the construction of state buildings to be located in the city of Sacramento, Cal., for the construction, equipment, and furnishing of which the people of the state of California have voted $3,000,000 in bonds, the site having been donated by the city of Sacramento.

Under the law, the State Architect shall act as architectural adviser in connection with the Competition.

This Competition will be conducted in two stages.

The first stage is open to all architects, citizens of the United States who have had the necessary experience, subject to the conditions prescribed in the Program of the Competition.

The second stage will be open to eight architects selected by the Jury from those competing in the first stage.

No competitor shall receive any remuneration unless chosen by the Jury and submitting drawings in the second stage.

The Program for this Competition is approved by the San Francisco Subcommittee on Competitions of the American Institute of Architects.

Architects desiring to compete must file with George B. McDougall, State Architect, Forum Building, Sacramento, Cal., a written request for a copy of the Program. On December 15, 1917, copies will be mailed simultaneously to all architects from whom written requests for same have been received. Copies will be mailed to architects making written requests for same after December 15, 1917, at the time of the receipt of such later requests.

(Signed) **BOARD OF CONTROL OF THE STATE OF CALIFORNIA**

MARSHALL DE MOTTE, *Chairman*
CLYDE L. SEAVEY
EDWARD A. DICKSON
Members of Board of Control
P. J. TEHANEY, *Secretary*

Dated: November 1, 1917.

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Geo. B. Rhinefrank, Architect *B. F. Laird, Builder*

Residence of Wm. W. Bock, Esq., Eagle Point Colony, Toledo, Ohio, Built of Hy-tex Equitable Grays, Shade No. 100, laid in American Bond with ¼ inch gray concave mortar-joint.

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